A PROFILE OF

MORBIDITY, MORTALITY AND LONG-TERM OUTCOME

OF

LATE PRETERM BIRTHS

Dissertation submitted to

THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY

In partial fulfilment of the regulations for

The award of degree of

M.D DEGREE (PEDIATRICS) BRANCH VII

INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN

MADRAS MEDICAL COLLEGE

APRIL 2016

CERTIFICATE

This is to certify that the dissertation titled, "**A PROFILE OF MORBIDITY, MORTALITY AND LONG–TERM OUTCOME OF LATE-PRETERM BIRTHS"**

Submitted by ***Dr.B.Abinaya Lakshmi,*** *to the Faculty of Paediatrics, The Tamilnadu Dr.M.G.R.Medical University, Chennai, in partial fulfilment of the requirements for the award of M.D.Degree(Pediatrics) is a bonafide research work carried out by her under our direct supervision and guidance, during the academic year 2013-2016*

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DECLARATION

I, **Dr.B.Abinaya Lakshmi**, Solemnly declare that the dissertation "**A PROFILE OF MORBIDITY, MORTALITY AND LONG–TERM OUTCOME OF LATE-PRETERM BIRTHS"** has been prepared by me under the guidance and supervision of Dr.Vanitha.

This dissertation is submitted to The Tamilnadu Dr.M.G.R Medical University Chennai in partial fulfilment of the rules and regulations for the M.D Degree Examination in Paediatrics.

Place: **Dr.B.Abinaya Lakshmi**

Date:

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I thank all the parents and the children who have ungrudgingly lent themselves to undergo this study and without them, this study would not have seen the light of the day.

INSTITUTIONAL ETHICS COMMITTEE
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CERTIFICATE OF APPROVAL

To

Dr.Abinaya Lakshmi.B.,
PG in M.D.(Paediatrics)
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Dear Dr. Abinaya Lakshmi.B.

The Institutional Ethics Committee has considered your request and approved your study titled **"A PROFILE OF MORBIDITY, MORTALITY AND LONG-TERM OUTCOME OF LATE-PRE-TERM BIRTHS"** NO.54012015.

The following members of Ethics Committee were present in the meeting hold on 20.01.2015 conducted at Madras Medical College, Chennai 3.

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11.Tmt.Arnold Saulina, MA., MSW.,	: Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary – Ethics Committee

Sys 2

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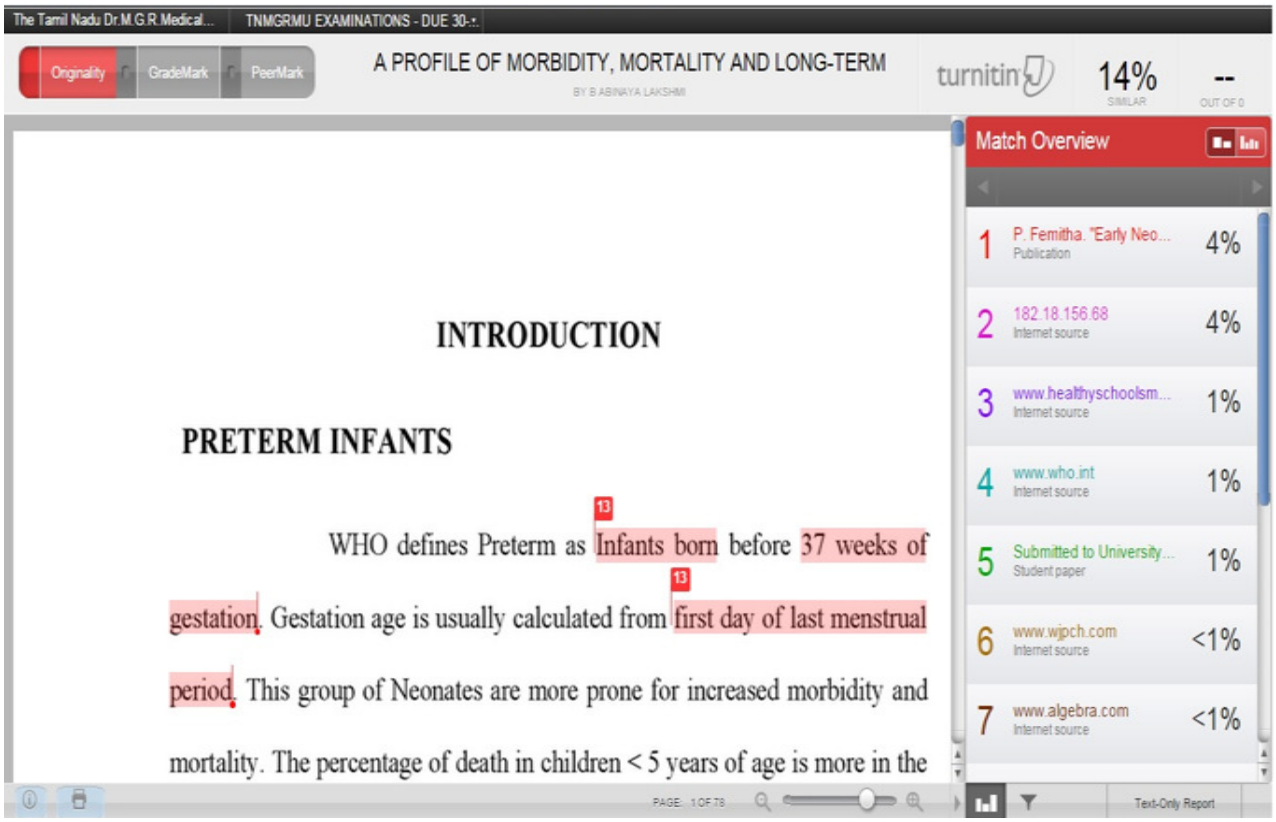
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PRETERM INFANTS
WHO defines Preterm as Infants born before 37 weeks of gestation. Gestation age is usually calculated from first day of last menstrual period. This group of Neonates are more prone for increased morbidity and mortality. The percentage of death in children < 5 years of age is more in the
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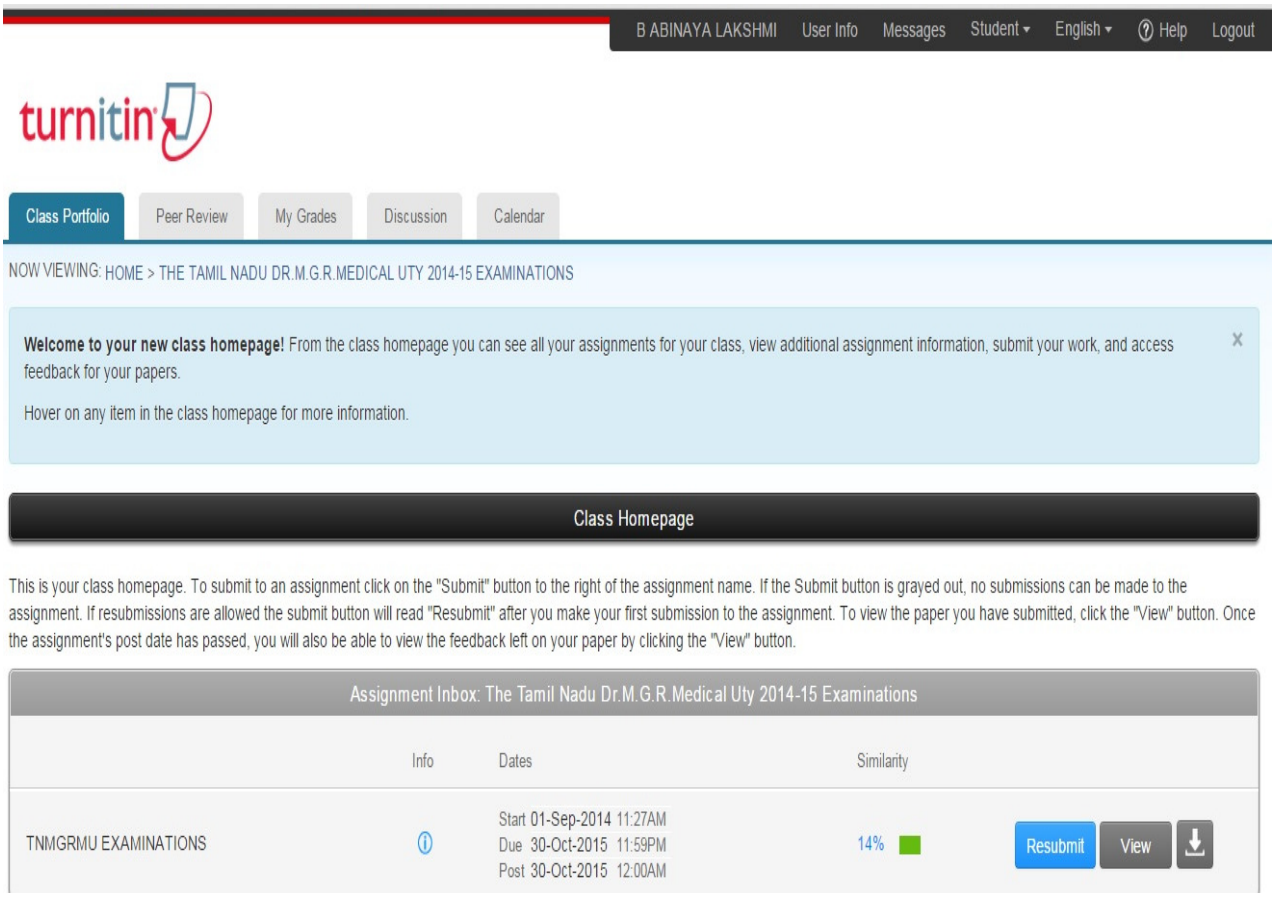
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INTRODUCTION

PRETERM INFANTS

CONTENTS

A PROFILE OF MORBIDITY, MORTALITY AND LONG-TERM OUTCOMES OF LATE PRETERM BIRTHS

Dr.B.Abinaya Lakshmi

Institute of Obstetrics and Gynecology ,Egmore and Institute of Child Health and Hospital for Children, Egmore, Chennai.

ABSTRACT:

OBJECTIVES: To assess the morbidity, mortality and Long term outcome of Late Preterm births.

METHOD: Prospective Observational Study (Descriptive study)

STUDY PLACE: Institute of Obstetrics and Gynaecology, Egmore, Chennai.

STUDY PERIOD: 2014-2015

RESULTS: 100 Late Preterm babies were assessed.16% of babies required Resuscitation at birth,33% had Respiratory distress,50% had Neonatal Hyperbilirubinemia,13% experienced Hypoglycemia,33% with Sepsis,9% required Intravenous fluids.17% were SGA,3% were LGA and 80% were AGA. Mortality was about 2%. On follow up at 6 months of corrected age for Prematurity, weight of 7% of babies were <3 percentile,81% of babies were between 3-50 percentile, 9% between 50-97 percentile and 1% >97 percentile. Neurodevelopmental assessments of these were found to be Abnormal in 5%, Questionable in 18% of babies.

Conclusion: Late Preterm babies have higher risk of neonatal morbidities. They also have growth and developmental concerns on follow up.

INTRODUCTION

PRETERM INFANTS

WHO defines Preterm as Infants born before 37 weeks of gestation. Gestation age is usually calculated from first day of last menstrual period. This group of Neonates are more prone for increased morbidity and mortality. The percentage of death in children < 5 years of age is more in the neonatal period of which many deaths are attributable to Preterm Births. Low birth weight also has increased because of increase in incidence of Preterm births. Also a strong positive correlation is always present between both Preterm, IUGR and low socio economic status.

In low income setting half of the babies born at 32 weeks die due to lack of feasible cost effective care like warmth breast feeding support and basic care for infection and breathing difficulties. In high income countries almost all of these babies survive.[1, 2]

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WHO statistics on Preterm

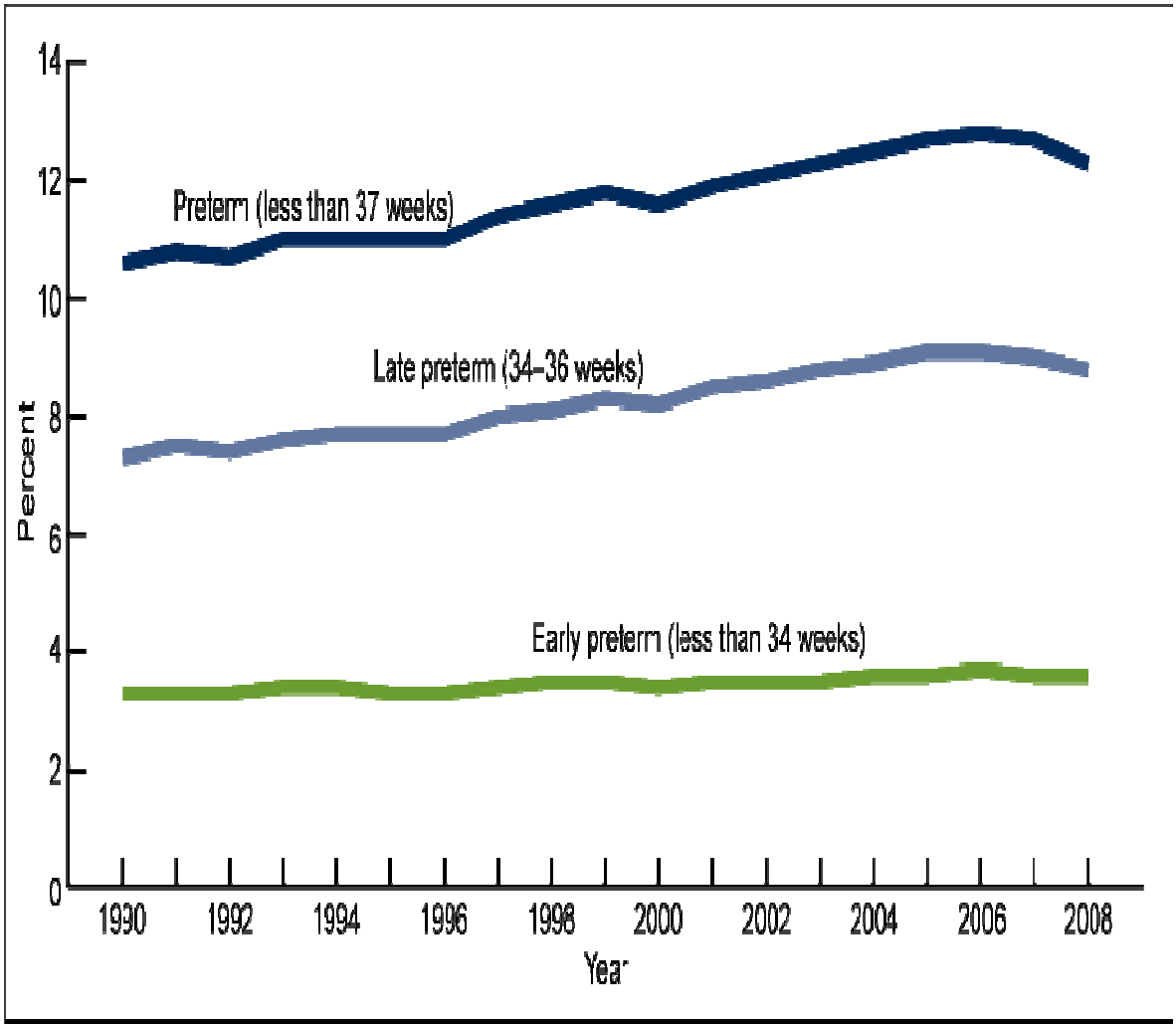
- 15 million babies are born too early every year
- Preterm births – more than 1/10 babies
- Almost 1 million children die each year due to complications of preterm births
- Many also face life time disabilities including learning difficulties, hearing and visual problems.

About three quarters of these babies can be saved with easily accessible, cost effective care like

- Essential care during child birth for both mother & baby and also during the post natal period.
- Antenatal steroids injections
- Kangaroo mother care
- Exclusive breast feeding
- Antibiotics to treat new born infections

To reduce preterm birth rates, women need improved care in the antenatal, Natal and in the post natal period. Also better access to family planning and increased empowerment will reduce preterm births.[3, 4]

Figure 1. Preterm birth rates: United States, final 1990–2006 and preliminary 2007 and 2008



SOURCE: CDC/NCHS, National Vital Statistics System.

SUB CATEGORIES OF PRETERM

Preterm is further categorized as

- **Extreme Preterm:** Infants born before 28 weeks of gestation
- **Very Preterm:** Infants born between 28 weeks and 31 6/7 weeks of gestation.

- **Moderate preterm:** Infants born between 32 weeks and 33 6/7 weeks of gestation.

- **Late preterm:** Infants born between 34 weeks and 36 6/7 weeks of gestation.[5]

ASSESSMENT OF GESTATIONAL AGE

Gestational age can be assessed by 3 methods

- First trimester Ultra sonogram :
    - Done at 6 – 12 weeks of gestation
    - Most Reliable method of assessing age of gestation.
- First day of last menstrual period
- New Ballard scoring:
    - Used to assess Gestation age 20 – 44 weeks
    - Score ranges from -10 to +50
    - It Consist of two components
        - ✓ Physical Maturity and
        - ✓ Neuromuscular Maturity

Components of NBS

Physical Maturity

- It includes skin, lanugo, plantar surface , breast, ear , genitals .
- Score ranges from -1 to +5

Sign	Score							Sign score
	-1	0	1	2	3	4	5	
Skin	Sticky, friable, transparent	Gelatinous, red, translucent	Smooth pink, visible veins	Superficial peeling and/or rash, few veins	Cracking, pale areas, rare veins	Parchment, deep cracking, no vessels	Leathery, cracked, wrinkled	
Lanugo	None	Sparse	Abundant	Thinning	Bald areas	Mostly bald		
Plantar surface	Heel-toe 40-50 mm: -1 <40 mm: -2	>50 mm No crease	Faint red marks	Anterior transverse crease only	Creases over anterior two-thirds	Creases over entire sole		
Breast	Imperceptible	Barely perceptible	Flat areola No bud	Stippled areola 1-2 mm bud	Raised areola 3-4 mm bud	Full areola 5-10 mm bud		
Eye/ear	Lids fused. Loosely: -1 Tightly: -2	Lids open. Pinna flat; stays folded	Sl. Curved pinna; soft; slow recoil	Well-curved pinna; soft but ready to recoil	Formed and firm; instant recoil	Thick cartilage; ear stiff		
Genitals (male)	Scrotum flat; smooth	Scrotum empty; faint rugae	Testes in upper canal; rare rugae	Testes descending; few rugae	Testes down; good rugae	Testes pendulous; deep rugae		
Genitals (female)	Clitoris prominent and labia flat	Prominent clitoris and small labia minora	Prominent clitoris and enlarging minora	Majora and minora equally prominent	Majora large, minora small	Majora cover clitoris and minora		
							Total physical maturity score	

Neuromuscular maturity

- ✓ It contains six components posture, square window (wrist), Arm recoil, Popliteal angle, Scarf sign, heel to ear .
- ✓ Score ranges from- 1 to +5

MATURATIONAL ASSESSMENT OF GESTATIONAL AGE (New Ballard Score)

Name _____ Date/Time of birth _____ Sex _____ **SCORE**

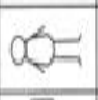
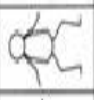
Hospital No. _____ Date/Time of exam _____ Birth weight _____ Neuromuscular _____

Race _____ Age when examined _____ Length _____ Physical _____

Apgar score: 1 minute _____ 5 minutes _____ 10 minutes _____ Head circ. _____ Total _____

Examiner _____

Neuromuscular maturity

Neuromuscular maturity sign	Score							Record score here
	-1	0	1	2	3	4	5	
Posture								
Square window (wrist)	 >90°	 90°	 60°	 45°	 30°			
Arm recoil		 180°	 140° to 180°	 110° to 140°	 90° to 110°	 <90°		
Popliteal angle	 180°	 160°	 140°	 120°	 100°	 90°	 <90°	
Scarf sign								
Heel to ear								
							Total neuromuscular maturity score	

Maturity rating

Score	Weeks
-10	20
-5	22
0	24
5	26
10	28
15	30
20	32
25	34
30	36
35	38
40	40
45	42
50	44

Reliability in assessment of Gestation age in order:

1. First Trimester Ultra sonogram
2. First day of Last Menstrual Period
3. New Ballard Scoring.

NBS is accurate to + or – 2 weeks.[6]

ETIOLOGY OF PRETERM

- Etiology is unknown in most of the cases.
- Multifactorial
- Interaction between Maternal, Uterine, Placental and Fetal factors.

Maternal Factors:

- Preeclampsia
- Medical illness in mother-Renal disease, Cyanotic heart disease
- Infections- Chorioamnionitis, Urinary Tract infection.

  Bacteria release IL-6 and Prostaglandins which induces local inflammatory response and also promotes premature uterine contractions causing amniotic membrane to rupture.
- Drug abuse

Uterine Factors:

- Cervical incompetence
- Uterine anomalies

Placental Factors:

- Placental Abruption
- Placenta Previa
- Placental dysfunction.

Fetal Factors:

- Fetal distress
- Twin Gestation/Multiple gestation
- Erythroblastosis
- Non immune hydrops

Others Causes:

- PROM(Premature rupture of membranes)
- Polyhydraminos
- Iatrogenic
- Trauma[7-10]

PROBLEMS OF PRETERM BIRTHS

Preterm babies face many problems due to the following reasons,

- Extra uterine adaptation becomes difficult
- Immaturity of various organ systems.

Respiratory:

- Respiratory distress syndrome - due to pulmonary immaturity and surfactant deficiency.
- Perinatal depression
- Apnea-due to immaturity in breath control
- Chronic Lung disease-Bronchopulmonary dysplasia

Neurological:

- Periventricular Leukomalacia
- Intraventricular hemorrhage
- Seizures
- Deafness
- Retinopathy of Prematurity,

Cardiovascular:

- Hypotension-probable causes include Cardiac dysfunction, Sepsis, Hypovolemia.
- Patent ductus arteriosus.

Gastrointestinal:

- Necrotising enterocolitis.
- Poor gastric motility.

Haematological:

- Anaemia.
- Hyperbiliribinemia.

Metabolic:

- Hypoglycemia
- Hyperglycemia
- Hypocalcemia

Temparature instability:

- Hypothermia-
- Hyperthermia

Renal:

- Hyponatremia, hypernatremia
- Hyperkalemia
- RTA

Immunologic:

Infections - because of deficiency in both humoral and cellular immunity response.

LONG TERM PROBLEMS OF PRETERM

- Cerebral palsy
- Mental Retardation
- Visual impairment, Hearing loss
- Learning disability, Hyperactivity, Behavioural disorders, Language disorders.
- Retinopathy of Prematurity
- Chronic Lung disease
- Poor growth.[11-13]

Management of Preterm infant

Immediate Management:

1) Delivery in a well equipped institution with skilled staff is preferable because institutional care at the appropriate time reduces the morbidity and mortality of preterm births.

2) It also requires well equipped resuscitation room well equipped with qualified personal trained in new born resuscitation.

3) Maintenance of temperature and oxygen delivery at the right time are immediate goals

Neonatal Management:

Thermal Regulation:

1) Temperature regulation is the foremost goal in new born care.

2) Aim is to achieve a neutral thermal zone.

Neutral Thermal Zone:-Environmental temperature sufficient to maintain body temperature with minimal oxygen consumption.

For Preterm this can be achieved by

- ✓ Radiant warmer- has rapid temperature response
- ✓ Closed Incubator – Decreased insensible water loss
- ✓ Combined Unit

Oxygen therapy and assisted ventilation:

Types of Ventilator support:

- Continuous positive airway pressure
- Pressure limited, time cycled, continuous flow ventilators
- Synchronised and patient triggered ventilators
- Volume-cycled ventilators
- High-frequency ventilation

Indications for respiratory support

Indications for CPAP in Preterm infant:

- Preterm infant with minimal respiratory distress and low supplemental oxygen requirement.
- Requirement of Fio2 above 30 % by hood with respiratory distress
- Fio2 above 40 % by hood
- Stabilisation in delivery room for ELBW babies.
- Initial management of premature infants with severe respiratory distress.
- Respiratory distress after extubation.
- To maintain lung volume after extubation.

Indications for Mechanical Ventilation:

- Prolonged Apnoea
- Pao2 <50 mmHg or Fio2 above 80 %
- Paco2 above 60mmHg with persistent academia
- General Anaesthesia.

CPAP DELIVERY DEVICE

Feeding Guidelines:

- 34 weeks – Breast Feeding
- 32-34 weeks – suck at breast and supplement with gokurnam or paladai feed of EBM
- 29-31 weeks – Orogastric tube feeds
- <28 weeks – IV fluids

Patent ductus arteriosus

1) Infants weighing more than 1 kg – conservative management with adequate oxygenation and fluid restriction.
2) Smaller infants may require Ibuprofen and Indomethacin
3) Systematic infants with contraindication to medical therapy or failure to medical therapy may require surgical allegation.

Fluid and electrolyte therapy

1) Preterm infants have relatively high insensible water loss. So maintenance of proper hydration is essential to prevent complications like dehydration and hypovolemia.

2) Maintenance of Euglycemia and electrolyte balance is mandatory as they are prone for hypoglycaemia and electrolyte imbalance.

Hyperbiliruienemia

1) More common in preterm infants. It can be effectively managed by Careful assessment of bilirubin levels, photo therapy, and Exchange transfusions in most severe cases.

Infections:

1) Infections may precipitate Preterm delivery and also Preterm infants are more prone for infections. An infant with symptoms and signs of sepsis, have to be evaluated for sepsis.

2) Careful Physical examination, Complete Blood count, CRP, and Blood culture should be done. First line of Antibiotics to be started in a suspected infant.

3) Anti staphylococcal antibiotics for infants,

    - VLBW babies
    - Infants with suspected nosocomial infections.

Immunisation:

1) Recommended vaccines - Diptheria, Acellular pertusis, Tetanus toxoids, IPVv, PCV, Hib-based on the chronological age.

2) Hep B vaccine for medically stable infants.

3) RSV and Influenza vaccine as indicated.

4) Rota virus vaccine-live oral vaccine not to be given till NICU discharge.[13-16]

Late Preterms-34 to 36 6/7 weeks, are immature physiologically and they do not compensate well to the extra uterine environment when compared with Term babies.

Late Preterm births are in increasing trend recently, accounting for about 74% of all Preterm births and 8%of total births. This is because of increased number of Caesarean deliveries, induction of labour and increase in the prevalence of maternal co-morbid factors. Late Preterm's are prone for all morbidities faced by Preterm as a whole. So it is essential to study the morbidity pattern in this sub group in order to improve Newborn care.

STUDY JUSTIFICATION

STUDY JUSTIFICATION

In recent trends, there are increasing numbers of babies born at 34-36 6/7 weeks of gestation due to various reasons. Only very little studies have been done on this sub group of infants. This group of infants are considered to have significant morbidity and mortality when compared to Term infants.

There is 2-3 fold increased rates of morbidities like Hypothermia, Hypoglycemia, Delayed fluid clearance, Respiratory distress, Hyperbilirubinemia, Poor feeding, Infections and Readmissions.

So an understanding of morbidity and mortality risks among Late Preterm is very important for health professionals to anticipate and to manage morbidity during birth hospitalisation.

Apart from assessing morbidities, a long term evaluation, monitoring and follow up of these infants are needed to optimise neonatal care and to improve human health status.

AIM

AND

OBJECTIVE

AIM AND OBJECTIVE

To assess the morbidity, mortality and Long term outcome of Late Preterm births.

SHORT-TERM OUTCOMES:

- Need for Resuscitation at birth
- Respiratory distress requiring oxygen/ CPAP/ Ventilation /Surfactant
- Hypoglycemia
- Jaundice requiring Phototherapy/Exchange transfusion.
- Sepsis
- Infants requiring Intravenous fluids
- Birth weight at birth-SGA/AGA/LGA
- Mortality

LONG-TERM OUTCOMES: Infants were followed up at 6 months of age for assessing the following parameters.

- Weight in percentile
- Neurodevelopmental outcome by DDST

Methodology:

Descriptive study

Inclusion criteria:

Babies delivered during 34 to 36 6/7 weeks of gestation either by Labour natural/Caesarean section/assisted delivery.

Exclusion criteria:

Babies delivered during < 34 weeks and > or equal to 37 weeks of gestation.

Babies with major congenital anomalies detected antenatally / postnatally have been excluded from the study.

METHODOLOGY

METHODOLOGY

Written informed consent obtained from parents for using their children's clinical data for study purpose.

Babies born in the hospital during the study period were assessed for their Gestational age.

Golden standard of assessment was taken as First Trimester Ultra sonogram, taken at 6-12 weeks of gestation.

In the absence of USG, gestational age was calculated based on 1st day of LMP, provided the maternal menstrual history is reliable.

In the absence of both the parameters of assessment, gestational age was assessed based on NBS.

Maternal data:

Relevant maternal details were collected as follows

Antenatal steroids:

- No.of doses of steroid given
- Reported as Complete/Incomplete/not given

Presence of Labour pain and duration of pain:

Indication of Late-Preterm delivery:

Mode of delivery:

Labour natural/LSCS/Assisted delivery

Baby details:

- Age of Gestation in weeks
- Sex-Boy/Girl
- Birth weights in kg were recorded.

SHORT TERM OUTCOMES

Neonatal morbidities were then recorded starting from need for resuscitation at birth.

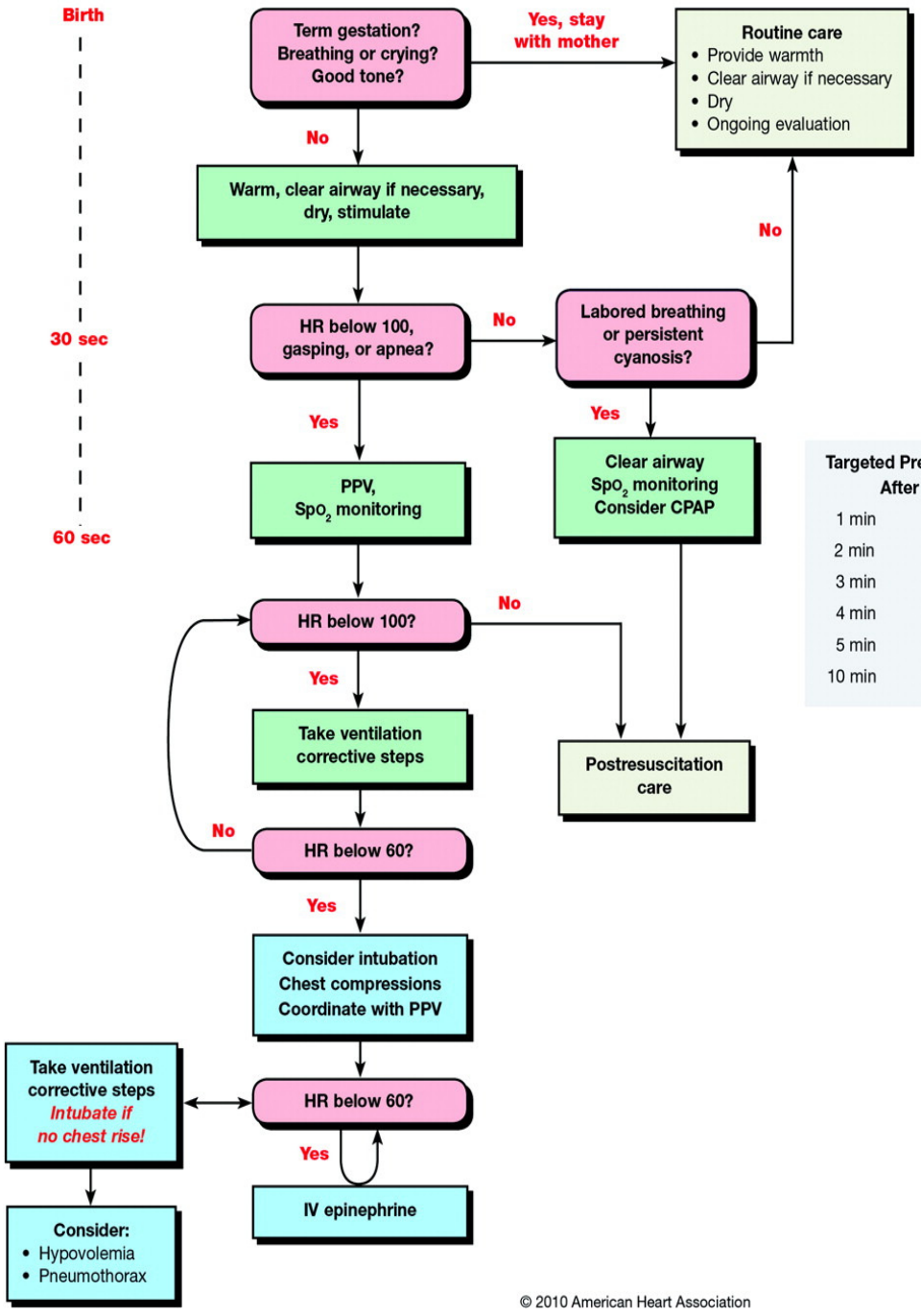
Need for resuscitation at birth:

Resuscitation in our hospital is carried out based on NRP Protocol. The details of resuscitation were recorded.

- Baby cried at birth-Yes/No
- APGAR at 1st and 5^{th} min of birth
- Extent of resuscitation recorded as

  Need for Initial steps/PPV/Chest compression

Newborn Resuscitation



Targeted Preductal SpO_2 After Birth	
1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%

Respiratory distress: Presence of atleast 2 of 3 following features,

- Tachypnea(RR->60/min)
- Retractions
- Expiratory Grunt.

Recorded as who require oxygen/Surfactant/Ventilation

Hypoglycemia:

Blood sugar <45 mg/dl-taken as hypoglycaemia.

Blood sugar was monitored by Glucometer.

Neonatal Hyperbilirubinemia:

Serum Bilirubin was done at 48 hrs of birth for the study population. Based on hour specific nomogramas per AAP guidelines, the decision of Phototherapy was made. Exchange transfusion was given when required.

Recorded as

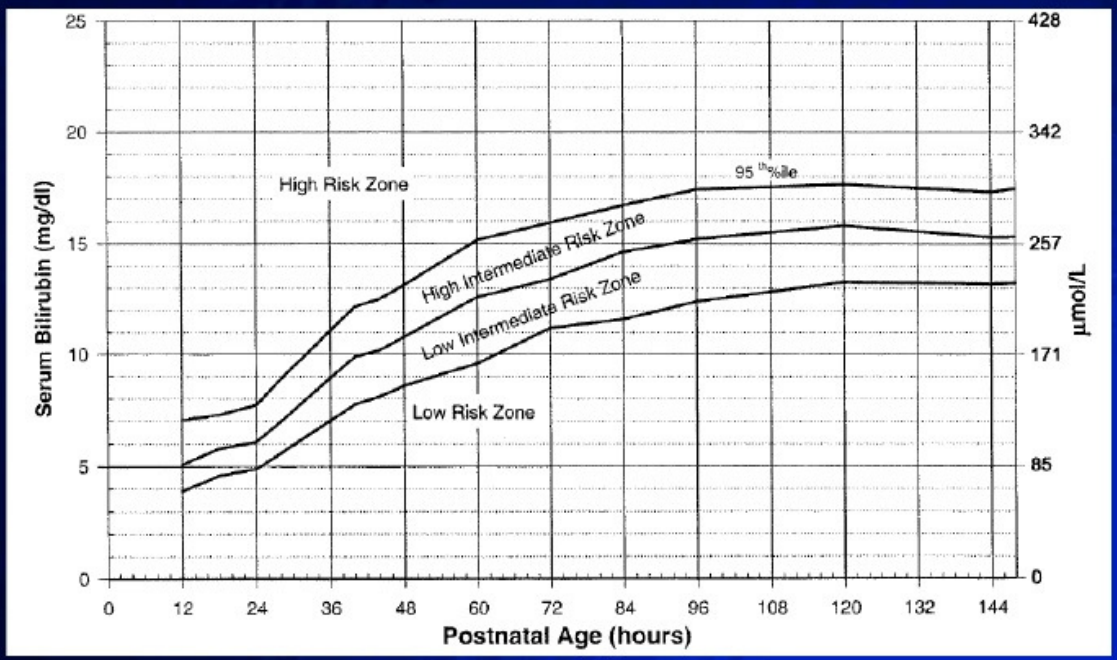
Neonatal jaundice requiring- No Treatment

Phototherapy

Exchange transfusion.

HOUR-SPECIFIC BILIRUBIN NOMOGRAM

(Bhutani VK, et al.Pediatrics 1999;103:6-14)



Sepsis: recorded as

- Suspected sepsis- based on clinical symptoms and signs of sepsis Antibiotics were given atleast for two days
- Probable sepsis- based on positive screening test for sepsis.CRP.Positive CRP is taken as >10mg/L.
- Culture positive sepsis

Requiring Intravenous fluid: recorded as

Requiring Intravenous fluid-Yes/No

Mortality- No.of deaths were recorded.

Birth weight:

- Reported as SGA/AGA/LGA
- Based on the Fenton's chart

LONG-TERM OUTCOMES

The Late Preterm babies were followed up at 6 months corrected age for Prematurity and they were assessed for

- Physical growth - Weight, Length and Head circumference
- Neurodevelopment outcome:
    - Assessed by Denver Developmental Screening test.This screening test is used to screen the development of young children.
    - Age group- 1 month to 6 yrs.
    - Time required-10 to 20 minutes
    - Domains:
        - Gross motor
        - Fine motor
        - Language
        - Psychosocial

Test materials: Zippered bag, Bell, Bottle, Set of 10 blocks, Rattle, Pencil, Tennis ball, Yarn, Raisins.

Administration of the Test: The test is done by observation of what the child can do and on report by a parent who knows the child. Every effort

should be made to put the child at ease.The test should be administered before any frightening or painful procedures.

Draw a vertical line on DDST at the child's Chronological age. For preterm babies up to two years correction for prematurity should be done. If a child passes an item, a large letter 'P' is written on the bar at the 50% passing point. 'F' – failure 'R' –refusal.

Failure to perform an item by 90% of children of the same age to be considered significant.Failure may be emphasized by right end of the bar. The left end of the bar denotes the age that the child could perform an item.

Interpretation of DDST

– Abnormal

- Questionable
- Normal

DENVER DEVELOPMENTAL SCREENING TEST
STO = STOMACH
SIT = SITTING
PERCENT OF CHILDREN PASSING
25
50
75
90
Test Item
Date
Name
Birthdate
Hosp. No.
MONTHS
YEARS
PERSONAL-SOCIAL
FINE MOTOR-ADAPTIVE
LANGUAGE
GROSS MOTOR
REGARDS FACE
SMILES RESPONSIVELY
SMILES SPONTANEOUSLY
INITIALLY SHY WITH STRANGERS
PLAYS PAT-A-CAKE
PLAYS BALL WITH EXAMINER
FEEDS SELF CRACKERS
INDICATES WANTS (NOT CRY)
RESISTS TOY PULL
PLAYS PEEK-A-BOO
DRINKS FROM CUP
WORKS FOR TOY OUT OF REACH
IMITATES HOUSEWORK
PUTS ON CLOTHING
USES SPOON, SPILLING LITTLE
WASHES & DRIES HANDS
HELPS IN HOUSE — SIMPLE TASKS
BUTTONS UP
DRESSES WITH SUPERVISION
SEPARATES FROM MOTHER EASILY
PLAYS INTERACTIVE GAMES e.g. TAG
REMOVES GARMENT
DRESSES WITHOUT SUPERVISION
50%
* 100% pass at birth
FOLLOWS TO MIDLINE
BOWEL MOVEMENTS *
FOLLOWS PAST MIDLINE
FOLLOWS 180°
HANDS TOGETHER
GRASPS RATTLE
REGARDS RAISIN
REACHES FOR OBJECT
SIT, LOOKS FOR YARN
SIT, TAKES 2 CUBES
BANGS 2 CUBES HELD IN HANDS
RAKES RAISIN ATTAINS
NEAT PINCER GRASP OF RAISIN
THUMB-FINGER GRASP
PASSES CUBE HAND TO HAND
SCRIBBLES SPONTANEOUSLY
TOWER OF 2 CUBES
TOWER OF 4 CUBES
TOWER OF 8 CUBES
DUMPS RAISIN FROM BOTTLE-SPONT.
DUMPS RAISIN FROM BOTTLE-DEMONSTR
IMITATES VERTICAL LINE WITHIN 30°
COPIES +
COPIES ○
COPIES □
IMITATES BRIDGE
IMITATES □ DEMONSTR.
DRAWS MAN 3 PARTS
DRAWS MAN 6 PARTS
PICKS LONGER LINE 2 OF 3
RESPONDS TO BELL
VOCALIZES - NOT CRYING
LAUGHS
SQUEALS
TURNS TO VOICE
DADA OR MAMA, NONSPECIFIC
DADA OR MAMA, SPECIFIC
IMITATES SPEECH SOUNDS
3 WORDS OTHER THAN MAMA, DADA
COMBINES 2 DIFFERENT WORDS
POINTS TO 1 NAMED BODY PART
NAMES 1 PICTURE
FOLLOWS DIRECTIONS/2 of 3
USES PLURALS
GIVES 1ST & LAST NAME
COMPREHENDS COLD, TIRED, HUNGRY/2 of 3
COMPREHENDS PREPOSITIONS/3 of 4
RECOGNIZES COLORS/3 of 4
OPPOSITE ANALOGIES 2 of 3
DEFINES WORDS/6 of 9
87%
COMPOSITION OF/3 of 3
87½
STO LIFTS HEAD
STO HEAD UP 45°
STO HEAD UP 90°
STO CHEST UP ARM SUPPORT
SIT - HEAD STEADY
ROLLS OVER
BEAR SOME WEIGHT ON LEGS
PULL TO SIT NO HEAD LAG
SITS WITHOUT SUPPORT
STANDS HOLDING ON
PULLS SELF TO STAND
GETS TO SITTING
STANDS MOMENTARILY
WALKS HOLDING ON FURNITURE
STANDS ALONE WELL
STOOPS & RECOVERS
WALKS WELL
WALKS BACKWARDS
WALKS UP STEPS
KICKS BALL FORWARD
THROWS BALL OVERHAND
BALANCE ON 1 FOOT 1 SECOND
JUMPS IN PLACE
PEDALS TRICYCLE
BALANCE ON 1 FOOT 10 SECONDS/2 of 3
HOPS ON 1 FOOT
CATCHES BOUNCED BALL/2 of 3
HEEL TO TOE WALK/2 of 3
BACKWARD HEEL-TOE/2 of 3
BROAD JUMP
BALANCE ON 1 FOOT 5 SECONDS/2 of 3
©1969, William K. Frankenburg, M.D. and Josiah B. Dodds, Ph.D., University of Colorado Medical Center.

Statistical Analysis

This study is a Descriptive study. It is an exploratory study and so sample size was not derived at. Late Preterm delivered at IOG were taken up for study and their morbidities were assessed. Also they were followed up for 6 months period to monitor weight and Neurodevelopmental outcome.

The results of this study is interpreted in Proportions.

95% Confidence interval has been calculated for each parameter using the formula.

Use the given degree of confidence and sample data to construct a confidence interval for the population proportion p.

---

16)n = 182, x = 135; 95 percent

---

sample proportion: p-hat = 135/182 = 0.74

E = 1.96*sqrt[0.74*0.26/182] = 0.0637

95% CI: 0.74-0.0637 < p < 0.74+0.0637

REVIEW

OF

LITERATURE

REVIEW OF LITERATURE

STUDY 1

TITLE: "Comparison of Neonatal morbidities of Late preterm with babies born term" **Amarjeet S Wagh and Naveen Jain**

Study Place: Department of Paediatrics and Neonatology, Kerala Institute of Medical Sciences, Trivandrum, Kerala.

Objectives of the Study:

To compare the neonatal morbidities of Late Preterm with babies born Term.

Primary outcomes:

- Need for resuscitation at birth
- Respiratory distress requiring Oxygen, CPAP, Ventilation and Surfactant therapy.
- Jaundice requiring treatment
- Feeding difficulties encountered and types of feeds at discharge

Secondary outcomes:

- To evaluate Late Preterm babies at 3 months of age corrected for Prematurity for following.

- Exclusive Breast feeding
- Physical growth
- Development assessment with DDST

Methodology: Prospective observational study

Study period: 18 months

Results:

Comparison between 114 late preterm babies and 1094 Term born babies were done.

PARAMETERS	**LATE PRETERM**	**TERM**
MORBIDITIES	85%	16.3%
NEED FOR RESUSCITATION	14%	1.7%
RESPIRATORY DISTRESS	29.8%	3.4%
HYPOGLYCEMIA	30%	2.2%
HYPERBILIRUBINEMIA	50%	10.4%
SEPSIS	9.6%	0.9%
INTRAVENOUS FLUID	58%	2%

83% were followed at 3 months of age corrected for prematurity.

- Weight = <5th percentile – 3.6%

  = 5 – 50 percentile – 83%

- Results of DDST =.8% - abnormal

  = 20.4% - Questionable

Conclusion:

Late Preterm Babies are more prone for Neonatal Morbidities. They also have growth and development concerns at 3 months. [17-21]

STUDY 2

TITLE: "Early Neonatal Morbities in Late preterm Infants"

–Ashish Jaiswal, Srinivas Murki ,Pramod gaddam and Anupama Reddy

Study Place: Fernandez hospital, Hyderabad

Aim and Objective:

To compare early Neonatal morbidity between term and late preterm infants.

Study Design: Prospective study

Subjects: All live born late preterm (34 – 36 6/7 weeks) and Term Babies (37 – 41 6/7 weeks)

Results:

363 late preterm infants and 2707 term infants were included in the study.

Variable	**Late preterm (*n*= 363) %)**	**Term (*n*= 2707) (%)**	***P* value**	**Adjusted OR (95%CI)**
Any morbidity	257 (70.8)	788 (29.1)	<0.001	5.5 (4.2-7.1)
Readmission	36 (9.9)	199 (7.4)	0.056	1.9 (1.2-2.8)
Hypoglycemia	32 (8.8)	39 (1.4)	<0.001	4.5 (2.6-7.7)
Respiratory morbidity	38 (10.5)	41 (1.5)	<0.001	7.5 (4.2-12.3)
Ventilation				
Any	11 (3)	23 (0.8)	0.001	4.2 (2-8.9)
CPAP	9 (2.5)	15 (0.5)		
IPPV	2 (0.5)	8 (0.3)		
Jaundice	200 (55.1)	671 (24.8)	<0.001	3.4 (2.7-4.4)
Probable sepsis	15 (4.1)	30 (1.1)	<0.001	3.2 (1.6-6.5)
Confirmed sepsis	4 (1.1)	1 (0.04)	0.001	

Conclusion:

Compared to term infants late preterm's are at higher risk for respiratory morbidities, need for Ventilation, jaundice, hypoglycaemia and probable sepsis. Infants of all gestation except 39 weeks are at higher risk for morbidity with 40 weeks as referral term.[22-32]

STUDY 3

TITLE: "Perinatal outcomes and associated maternal Co-morbid conditions in Late Pre term births"

–Divyakala Karegoudar, Arati Prabhu , Kapil amgain and Mukesh dhital

Study Place: Kles Dr.Prabhakar Kore Hospital Belgaum India

Aim and Objective: The aim of the study is to find out the incidence of Late preterm births and to identify the causes, mode of delivery, maternal co-morbid conditions and perinatal outcomes

Method: Prospective Study

Study population:

Conducted in 161 pregnant woman who delivered between 34 and 36 6/7 weeks of gestation at Dr.Prabhakar Kore Hospital Belgaum from Nov 2012 to Nov 2013

Results:

The perinatal and Maternal outcome were assessed. Most of the women 56 (34.78%) were aged 22 to 25 years and mean age was 24.54 ± 4.18 years. 85 (52.80%) of the women were Primipara and history of previous preterm pregnancy in 3.11% of women was detected. Labour was indicated in 60 (37.27%) of women while in 101 (62.73%) labour was spontaneous. In those with indicated labour, 14(36.84%) were induced and 36.84% had vaginal delivery while 24 (63.16%) underwent emergency

LSCS. With regard to spontaneous labour, 67 (66.34%) underwent vaginal delivery and 34 (33.66%) had emergency LSCS. Post partum eclampsia and eclampsia were noted in 2(1.24%) each. The incidence of late preterm birth was 61.68%. Most of the babies (41.61%) fell in birth weight between 1.51 to 2.00 Kgs and mean birth weight was 2.19 ± 0.48 Kgs. 84 (52.17%) of babies who required NICU admission and low birth weight 51 (60.71%) was the common cause. The mortality was observed in 5 (5.95%) of the babies.

Conclusion:

Late preterm births make significant impact on perinatal outcome at each week of gestation 34, 35 and 36 weeks 6 days respectively. So managing late preterm births demands judicious decision making to reduce the morbidity and mortality.[32-36]

STUDY 4

TITLE: "Early neonatal outcome in late preterms**"**

- Femitha P, Bhat BV.

Objectives: To study the maternal risk factors, morbidity and mortality of late preterm and to compare them with term neonates

Study Method: Cohort Study

Results:

Late preterm babies were about 55% of all live preterm births during the study period. The odds of babies developing major morbidity was significantly more in those whose mothers had hypertension and infections (OR 2.69 95% CI: 1.55, 4.68 and 2.08, 95% CI: 1.6, 2.71 respectively). In the study group, 42.4% and 20.8% babies suffered major and minor morbidity compared to term who suffered 8.4% and 6.8% of morbidity. Late preterm neonates had significantly higher odds of developing morbidity like respiratory distress (12.4% vs. 5.6%, OR 2.21, 95%CI 1.21,4.11), need for non invasive(17.3% vs. 5.7%, OR 3.05 95% CI 1.69, 5.47) and invasive ventilation (14.6% vs. 1.7%, OR 8.62, 95% CI 3.09, 24.04), seizures (22.8% vs. 4.8%, OR 4.75 95%CI 2.61, 8.63), sepsis (20.8% vs. 5.2%, OR 5.20, 95% CI 2.71, 9.99), shock (17.6% vs. 4.4%, OR 4.00 95% CI 2.12,7.56), and jaundice (26% vs. 6%, OR 4.33 95%CI 2.54, 7.39). By logistic regression,

the odds of developing major morbidity decreased with increasing gestational age (aOR 0.28 95% CI 0.18, 0.45; $p < 0.001$) and increased with hypertensive disease of pregnancy (aOR 2.16 95% CI1.09, 4.260; $p = 0.026$).

Conclusion:

Late Preterm infants have significantly more morbidity and mortality compared to term. Lower gestational age and Maternal Hypertension are strongest predictors of morbidity[36-39]

STUDY 5

TITLE: "An overview of Morbidity, Mortality and Long term outcome of Late preterm birth"

– World Journal of Paediatrics, August 20 11,Vol 7 , Issue 3 ; pp 199-204

Data Source:

Articles Concerned with Morbidity, Mortality and long term outcome of late preterm infants taken from Pub med published during 2000 – 2010

Results:

Late Preterm Infants are the fastest growing group of neonates which comprises majority of preterm births compared with term babies'. They have significantly higher risk of morbidity, Mortality and adverse long term outcomes.[40-41]

OBSERVATION

AND

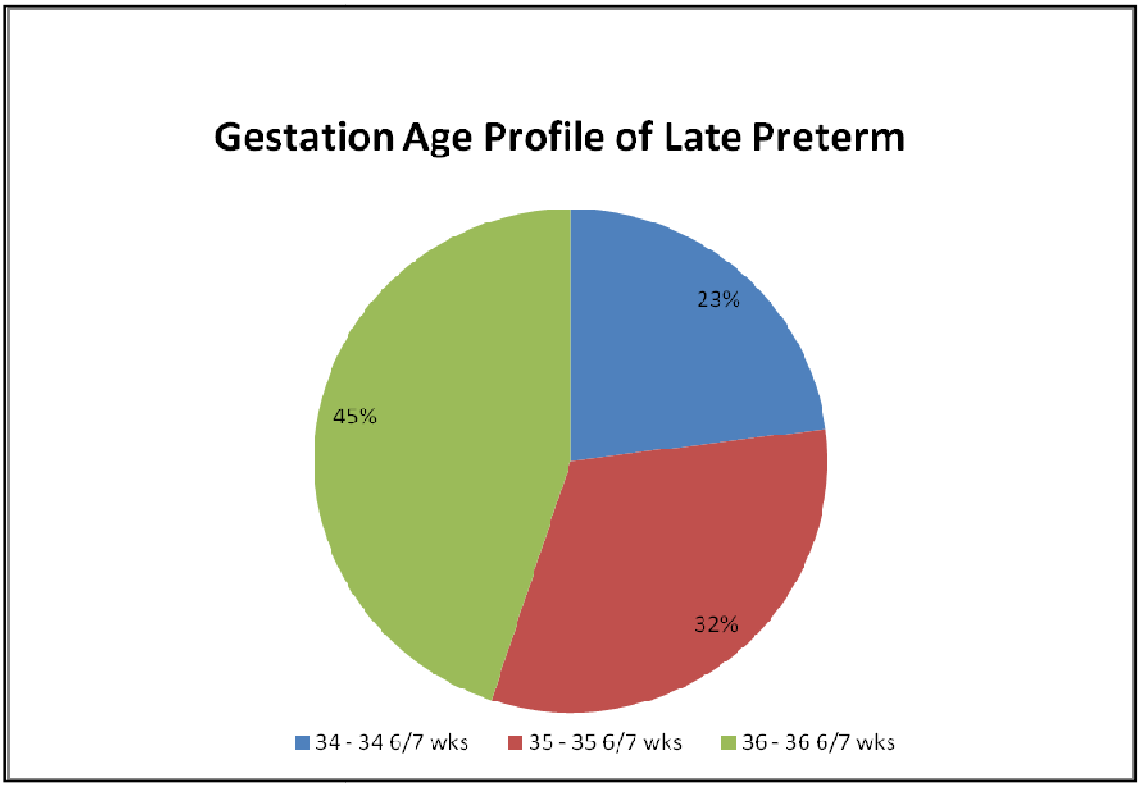
RESULTS

DESCRIPTION OF STUDY POPULATION

GESTATION AGE PROFILE OF LATE PRETERM

Age in weeks	No. of Babies	Percentage
34 - 34 6/7 wks	23	23%
35 - 35 6/7 wks	32	32%
36 - 36 6/7 wks	45	45%
Total	100	100%

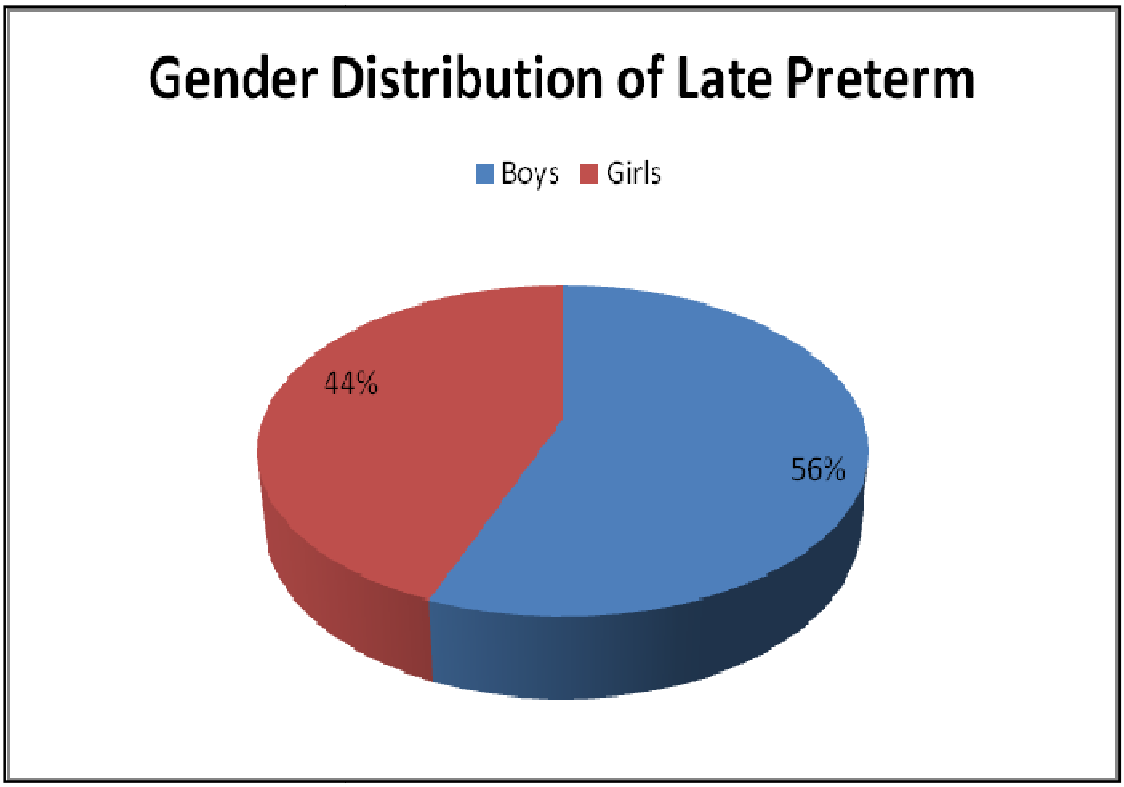
Out of 100 Late preterm babies 23% were delivered at 34 – 34 6/7 weeks of gestation, 32% at 35 – 35 6/7 of gestation and 45 % at 36 – 36 6/7 weeks of gestation.



GENDER DISTRIBUTION OF LATE PRETERM

Gender	**No. of Babies**	**Percentage**
Boys	56	**56%**
Girls	44	**44%**

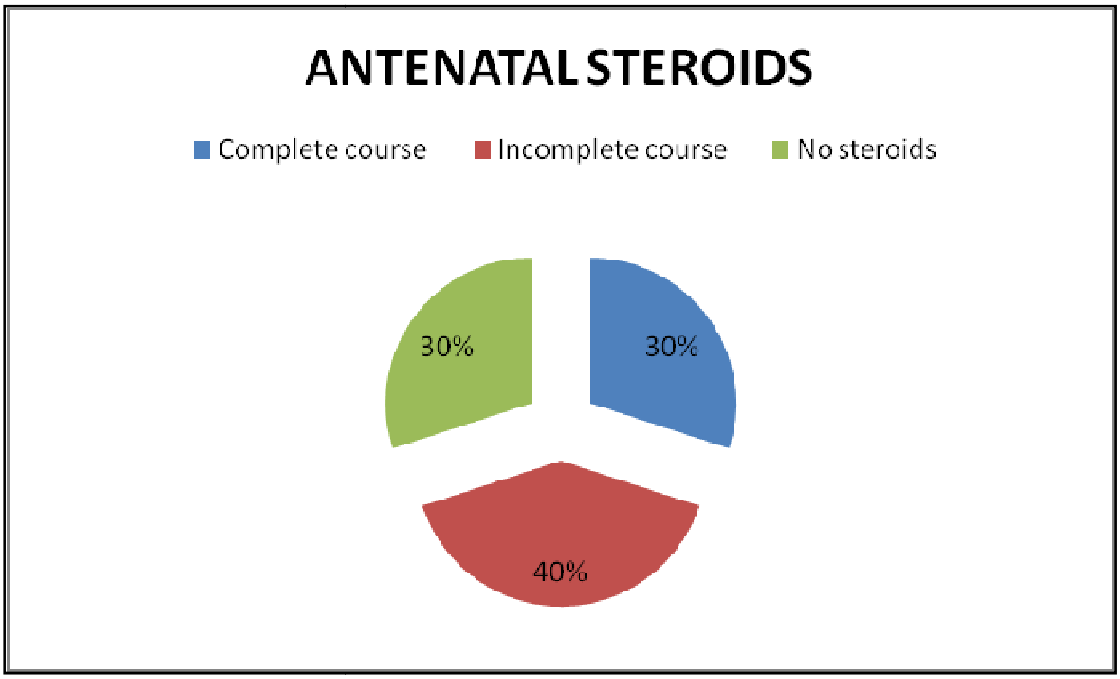
Out of 100 Late preterm 56% were boys and 44 % were girls.



ANTENATAL STEROIDS

Antenatal Steroids	Total	Percentage
Complete course	30	30%
Incomplete course	40	40%
No steroids	30	30%

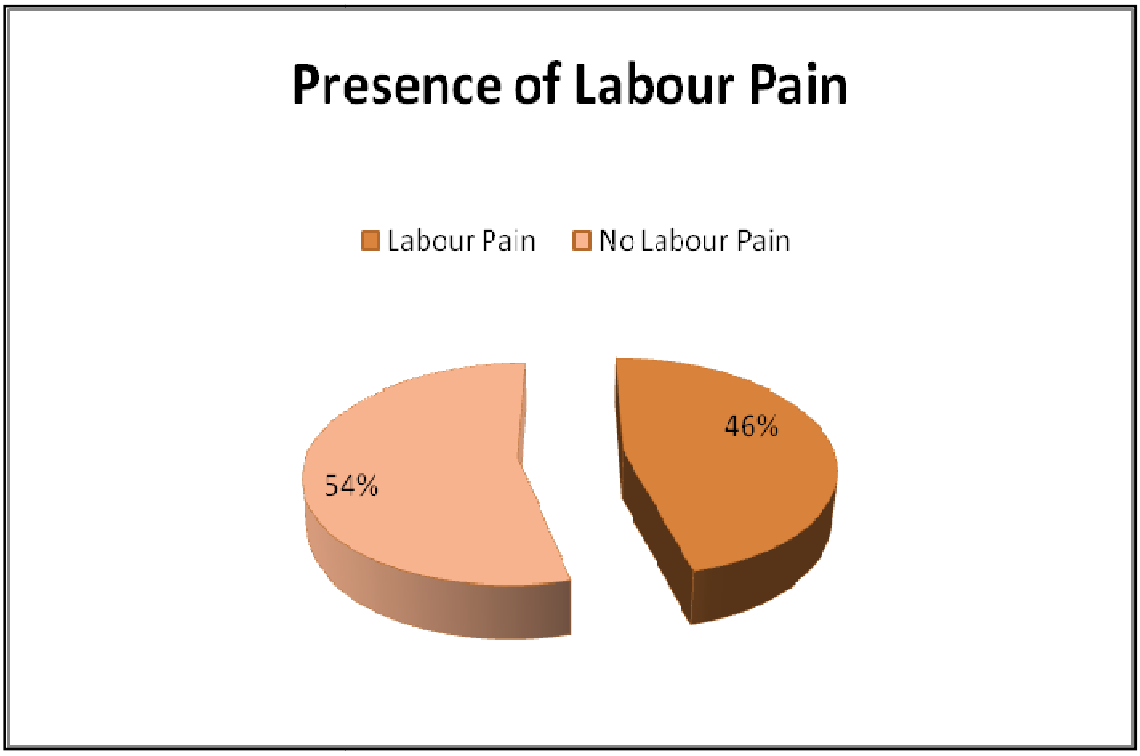
Out of Mothers of 100 Babies, Mothers of 30 babies received complete course of antenatal steroids, Mothers of 40 babies received incomplete course of steroids and other Mothers received no steroids.



PRESENCE OF LABOUR PAIN

Presence of Labour Pain	Number	Percentage
Labour Pain	46	46%
No Labour Pain	54	54%

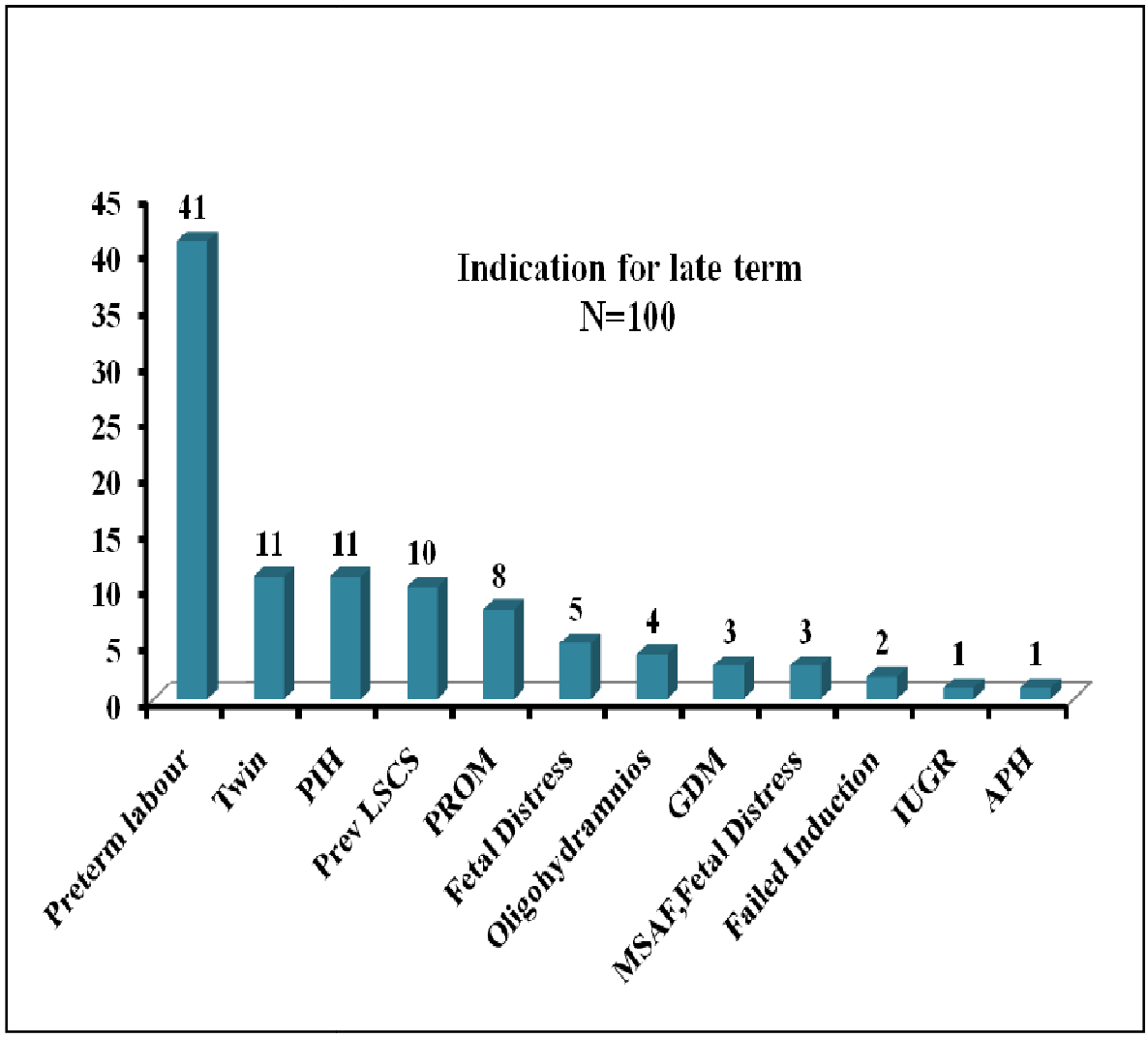
46% of mothers had labour pain and 54% of mothers experienced no labour pain.



INDICATIONS OF LATE PRETERM BIRTHS

Indication for late term	Numbers	Percentage
Preterm labour	41	41%
Twin	11	11%
PIH	11	11%
Prev LSCS	10	10%
PROM	8	8%
Fetal Distress	5	5%
Oligohydramnios	4	4%
GDM	3	3%
MSAF, Fetal Distress	3	3%
Failed Induction	2	2%
IUGR	1	1%
APH	1	1%
Total	100	100%

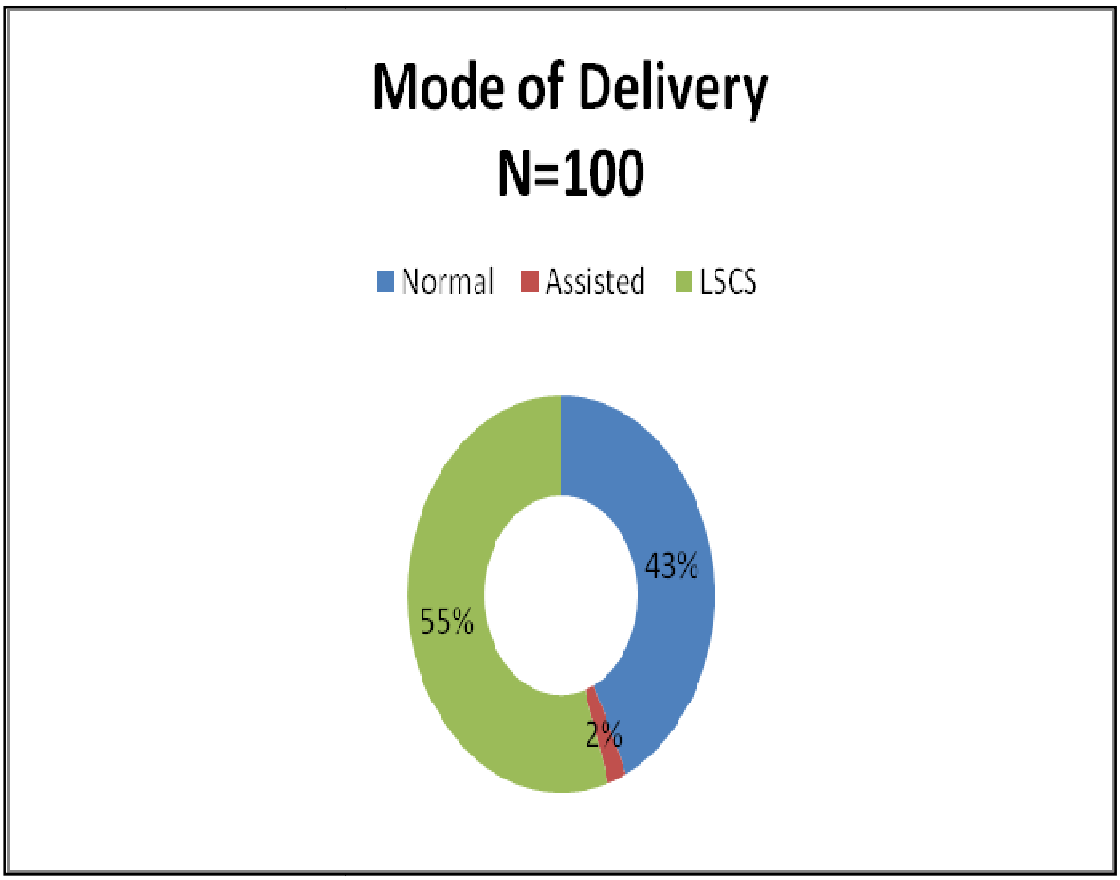
Out of hundred Late preterms ,Spontaneous Pretem labour was the indication for 41% followed by twin gestation of 11%, PIH -11%, Previous LSCS – 10%, PROM – 8%, Fetel Distress – 5%, Oligohydrominos – 4%, GDM – 3%, MSAF – 3%, Failed Induction -2%, IUGR – 1%, APH – 1%



MODE OF DELIVERY:

Mode of Delivery	Numbers	Percentage
Normal	43	43%
Assisted	2	2%
LSCS	55	55%
Total	100	100%

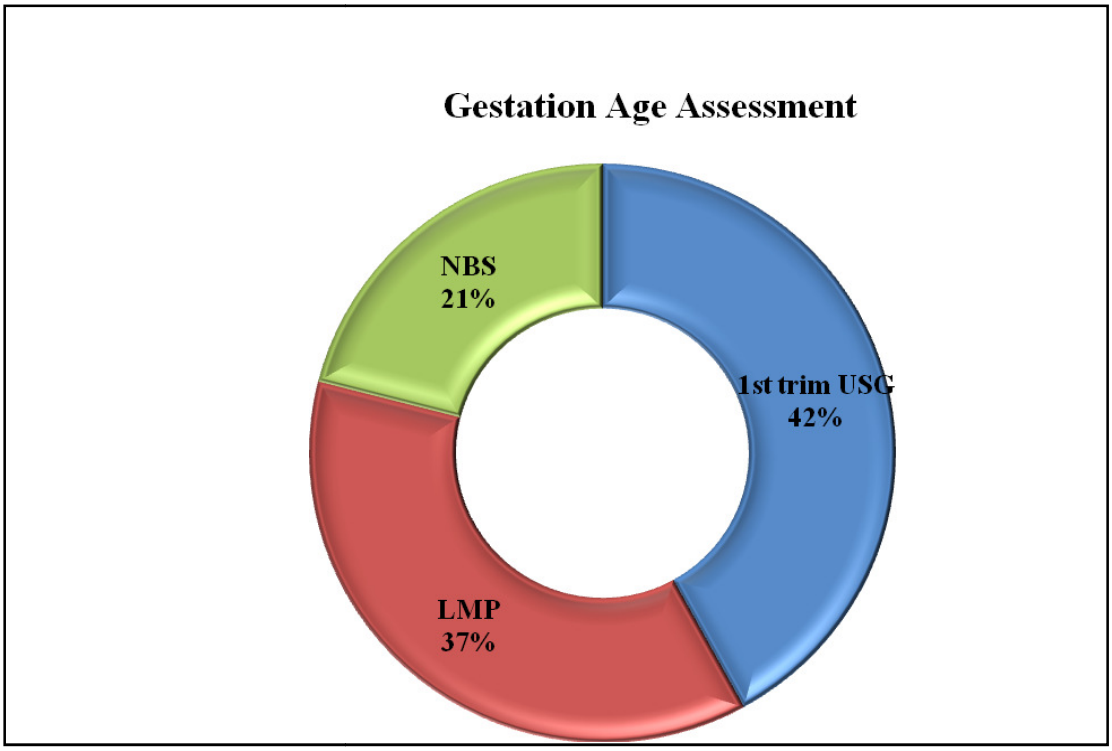
Of all the deliveries labour natural accounted for 43%, LSCS accounted for about 55% and assisted delivery about 2%.



GESTATION AGE ASSESSMENT

Gestational Age(34-36 6/7wks) as per	Number	Percentage
1st trim USG	42	42%
LMP	37	37%
NBS	21	21%
Total	100	100%

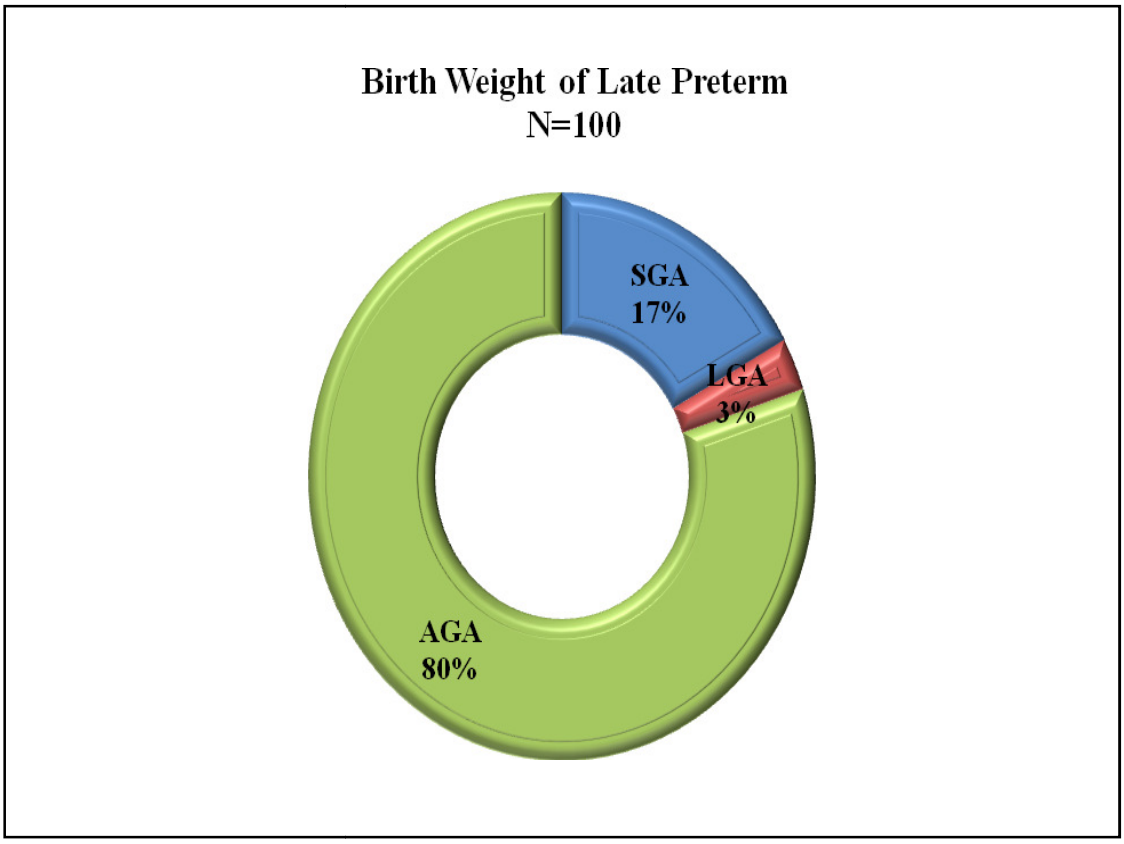
The Gestation age in 42% of babies were assessed by 1st trimester ultra sonogram, 37 % by LMP and 21% by New Ballard scoring



BIRTH WEIGHT OF LATE PRETERMS

Birth Weight	Number of Babies	Percentage
SGA	17	17%
LGA	3	3%
AGA	80	80%
Total	100	100%

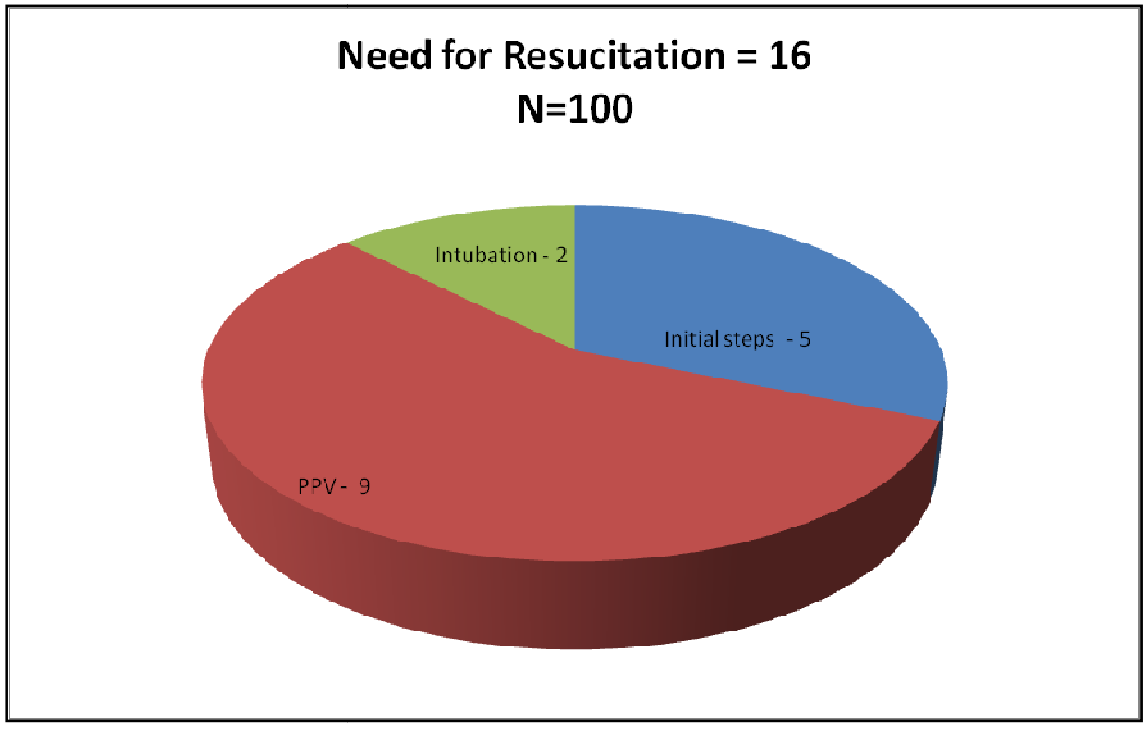
Of Total no of 100 babies,17% were SGA(Small for Gestation age),3 % were LGA(Large for Gestation age) and 80% were AGA(Appropriate for Gestation age)



NEED FOR RESUSCITATION AT BIRTH

Need for Resuscitation at Birth	No of Babies req. Resuscitation	Percentage
Initial steps	5	5.0%
PPV	9	9.0%
Intubation	2	2.0%
Total	**16**	**16 out of 100**

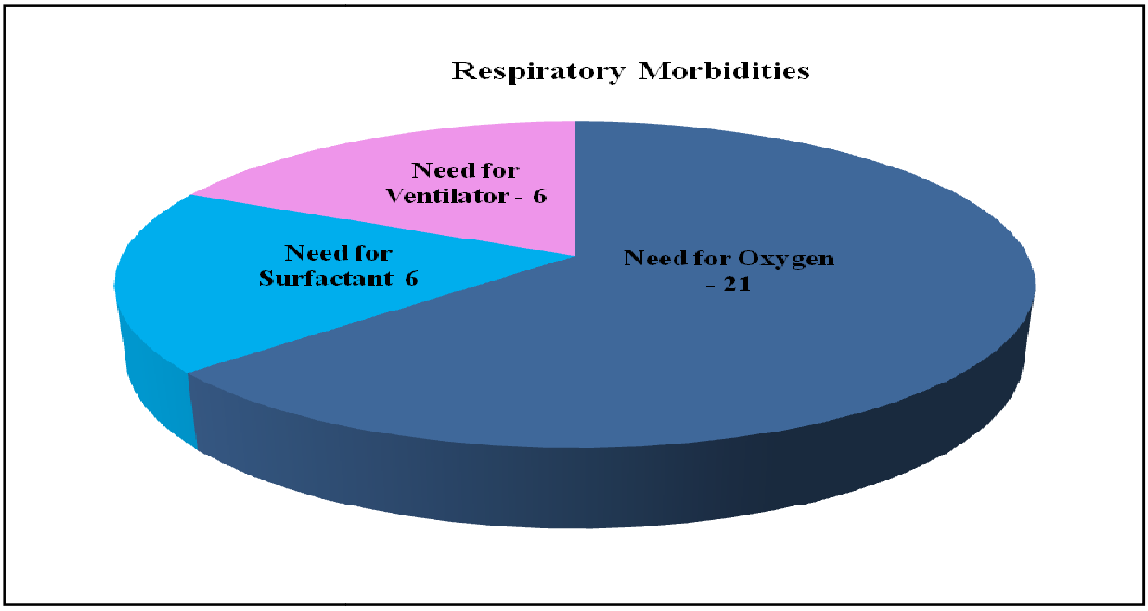
Of total no. of 100 babies 16% required Resuscitation. Out of those 16 babies 5 babies' required initial steps, 9 babies required PPV and 2 babies required intubation.**The 95% Confidence interval for the parameter Need for resuscitation ranges from 9% to 23%**.



RESPIRATORY DISTRESS

Respiratory Distress Requiring	No	Percentage
Need for Oxygen	21	21.0%
Need for Surfactant	6	6.0%
Need for Ventilator	6	6.0%
TOTAL	**33**	**33% out of 100**

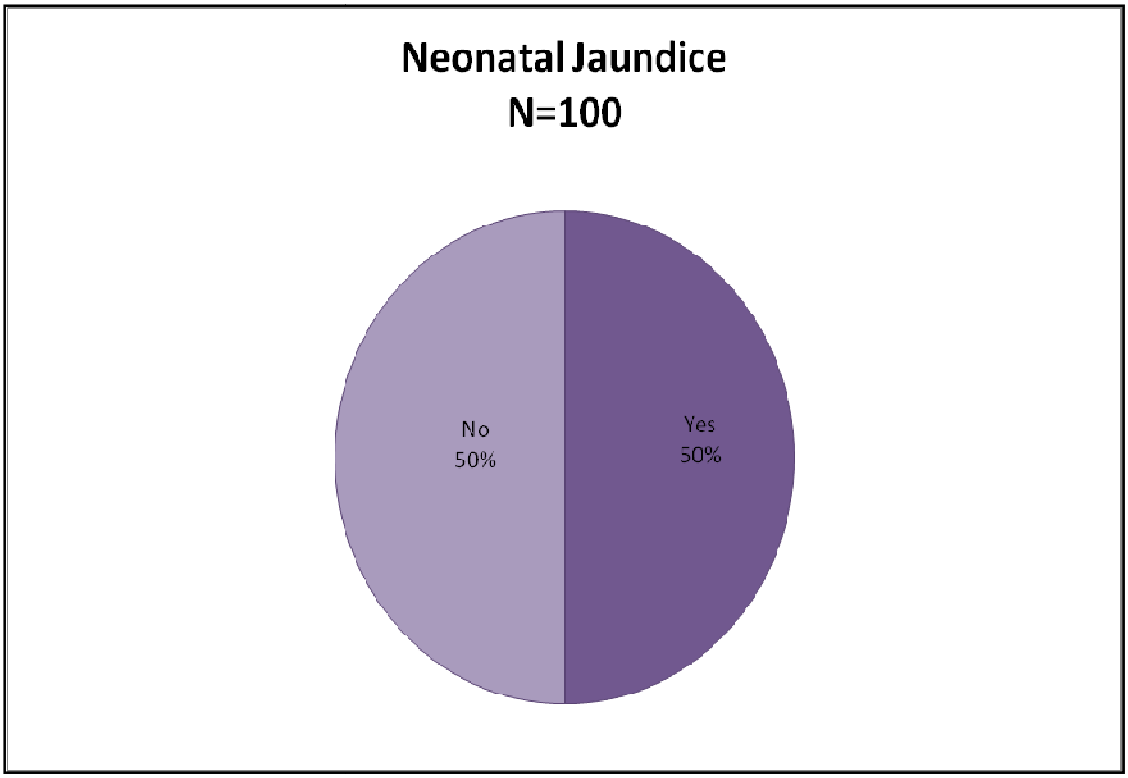
Of 100 Late preterm 33% had respiratory distress, out of that 21 babies required oxygen, 6 babies required surfactant and 6 babies required ventilator support**. The 95% confidence interval for the parameter respiratory distress ranges from 23% - 42%.**



NEONATAL JAUNDICE

Neonatal Jaundice	No of Babies with Jaundice	Percentage
Yes	50	50%
No	50	50%
Total	100	100%

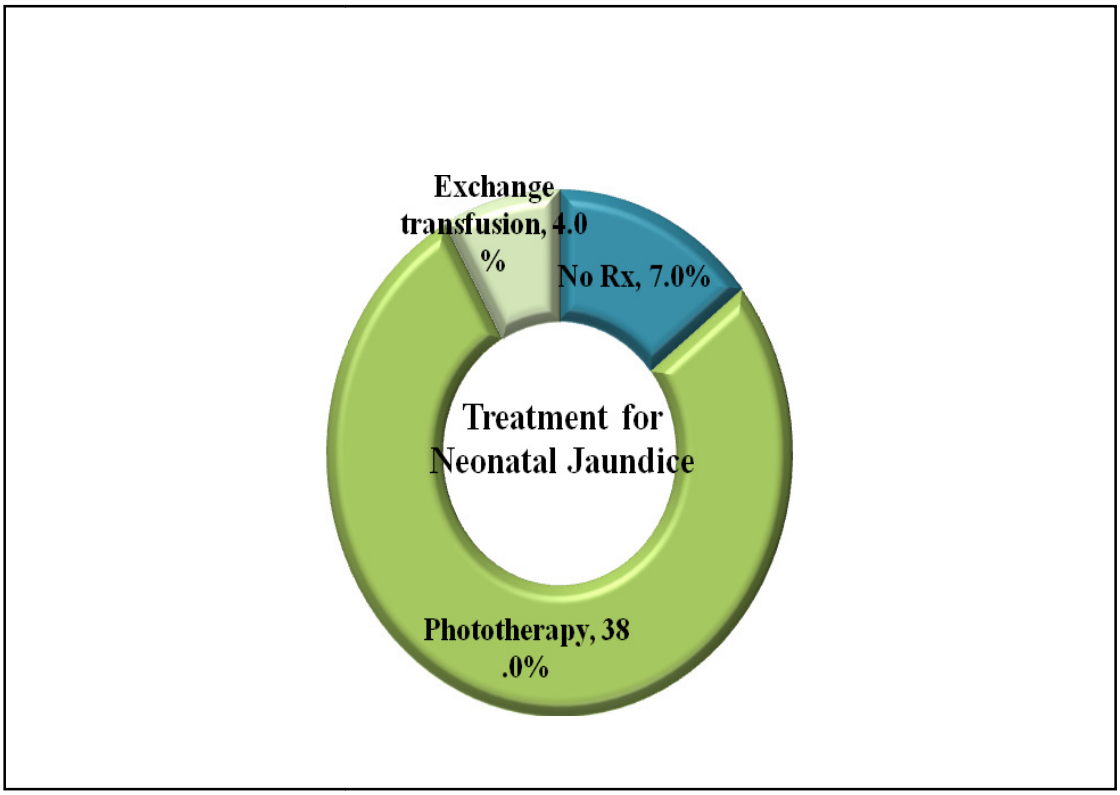
Of Total 100 babies, 50 babies had Neonatal jaundice**.The 95% Confidence interval for the parameter Neonatal jaundice , ranges from 40% to 59%.**



TREATMENT OF NEONATAL JAUNDICE

Treatment for neonatal Jaundice	No of Babies with Jaundice	Percentage
No Rx	7	7.0%
Phototherapy	38	38.0%
Exchange transfusion	4	4.0%
Total	50	50%

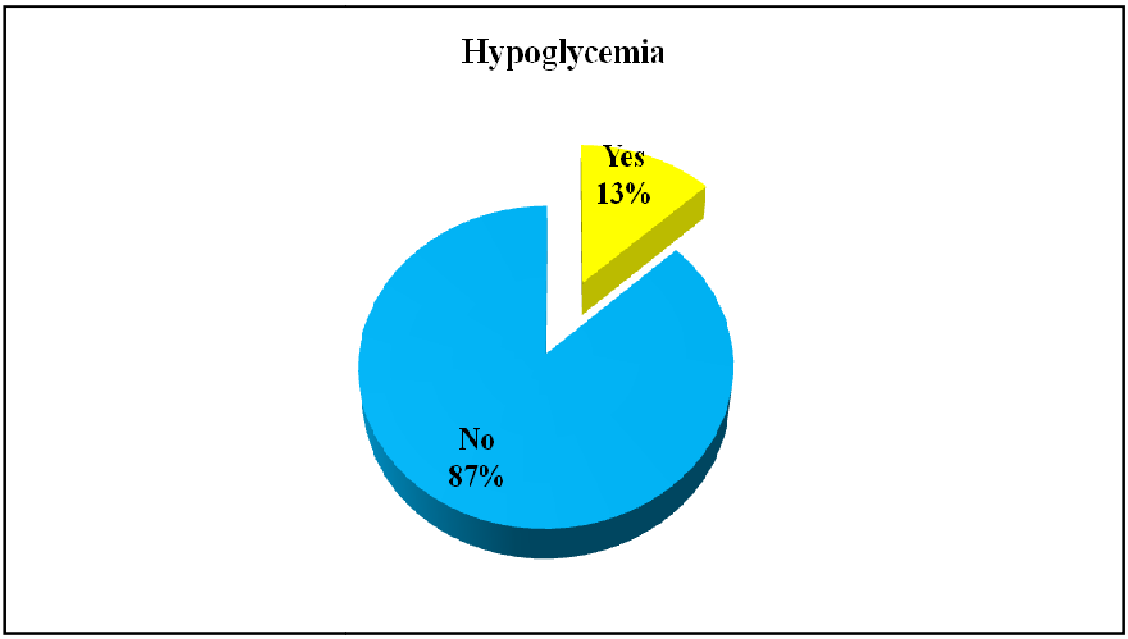
50 out of 100 babies had Neonatal Hyperbilirubinemia.Out of this 50 Babies,38 babies required Phototherapy as modality of treatment,4 babies required Exchange Transfusion, and 7 babies required no treatment.



HYPOGLYCEMIA

Hypoglycemia	No.of babies	**Percentage**
Yes	13	13%
No	87	87%
Total	**100**	**100%**

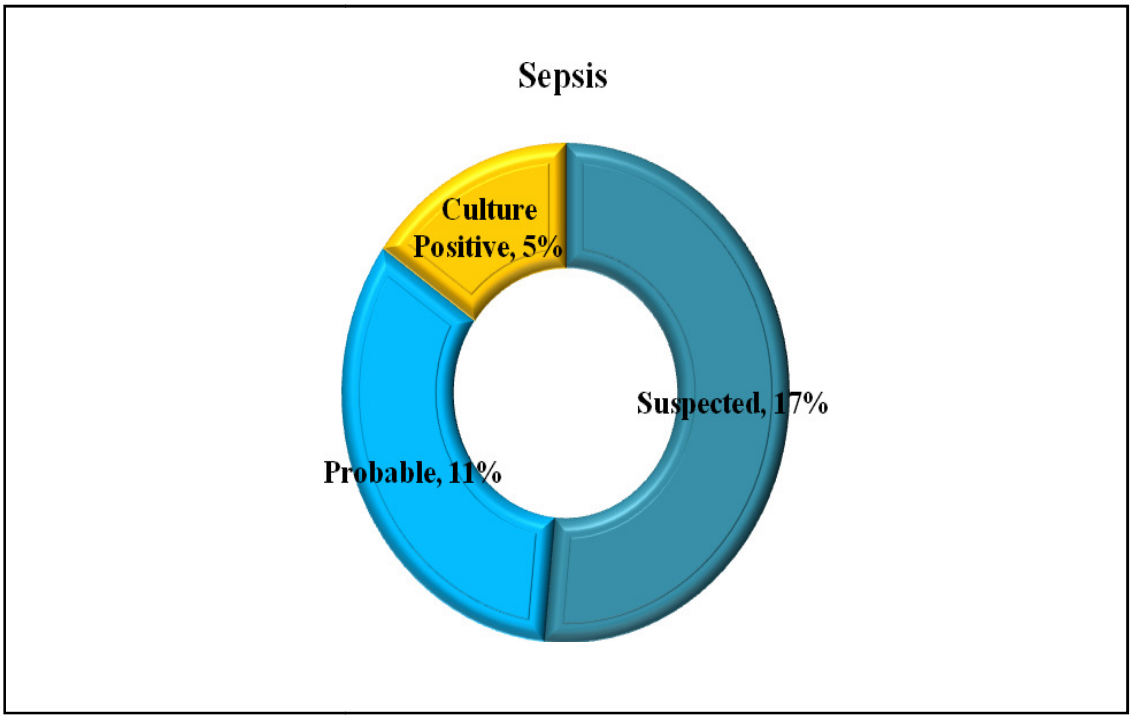
Out of 100 Late Preterm 13% had hypoglycemia.**The 95% confidence interval for the parameter hypoglycemia 6% - 19%**



SEPSIS

Sepsis	No	Percentage
Suspected	17	17%
Probable	11	11%
Culture Positive	5	5%
Total	**33**	**33% out of 100**

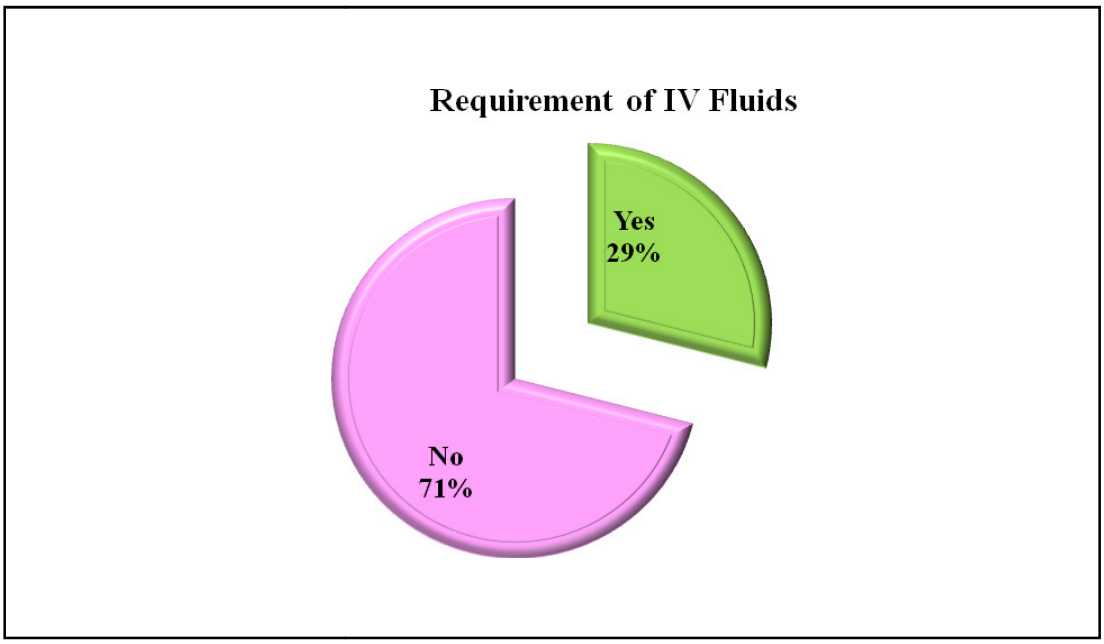
Of 100 Late preterm's 33 babies had sepsis out of that 17% had suspected sepsis, 11% had Probable sepsis and 5% had Culture Positive sepsis**. The 95% confidence interval for the parameter sepsis ranges 23% - 42%**



REQUIREMENT OF IV FLUID

IV fluids	No	Percentage
Yes	29	29%
No	71	71%
Total	100	100%

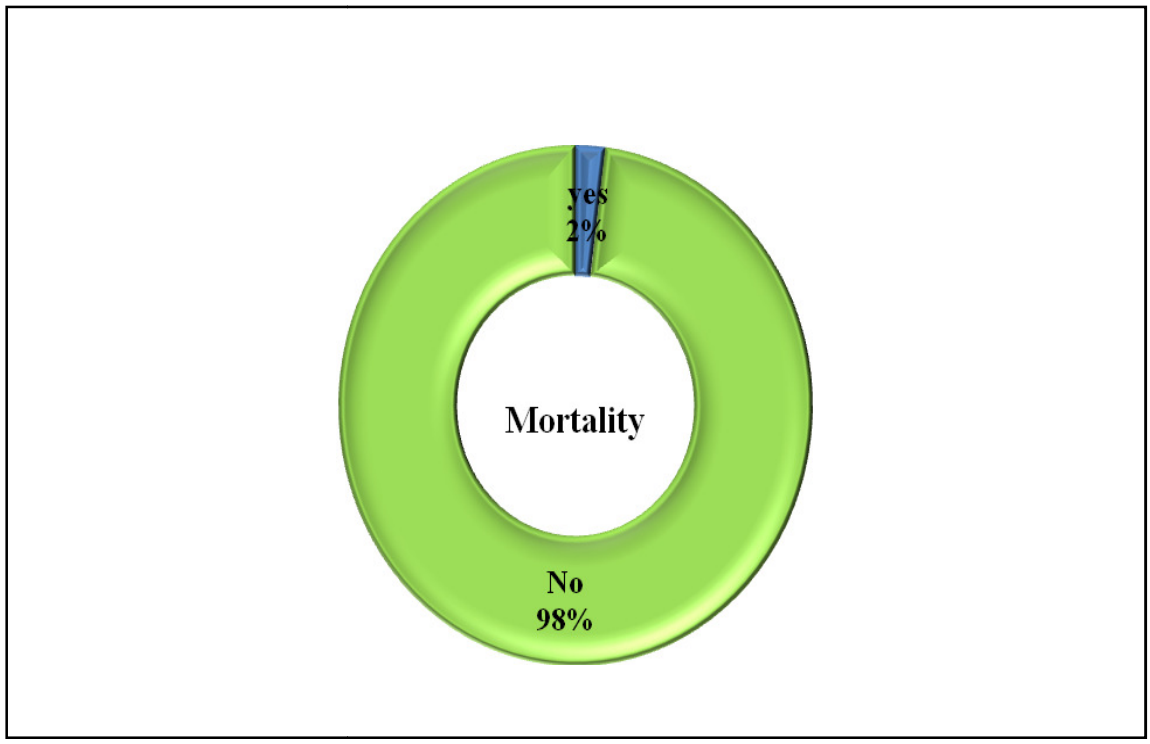
Of 100 babies 29% received IV fluids**. The 95% confidence interval for the parameter requirement of IV fluids 20% - 38%.**



MORTALITY

Mortality	No	**Percentage**
Yes	2	2%
No	98	98%
Total	**100**	**100%**

Mortality in Latepreterms with N=100 is 2%.

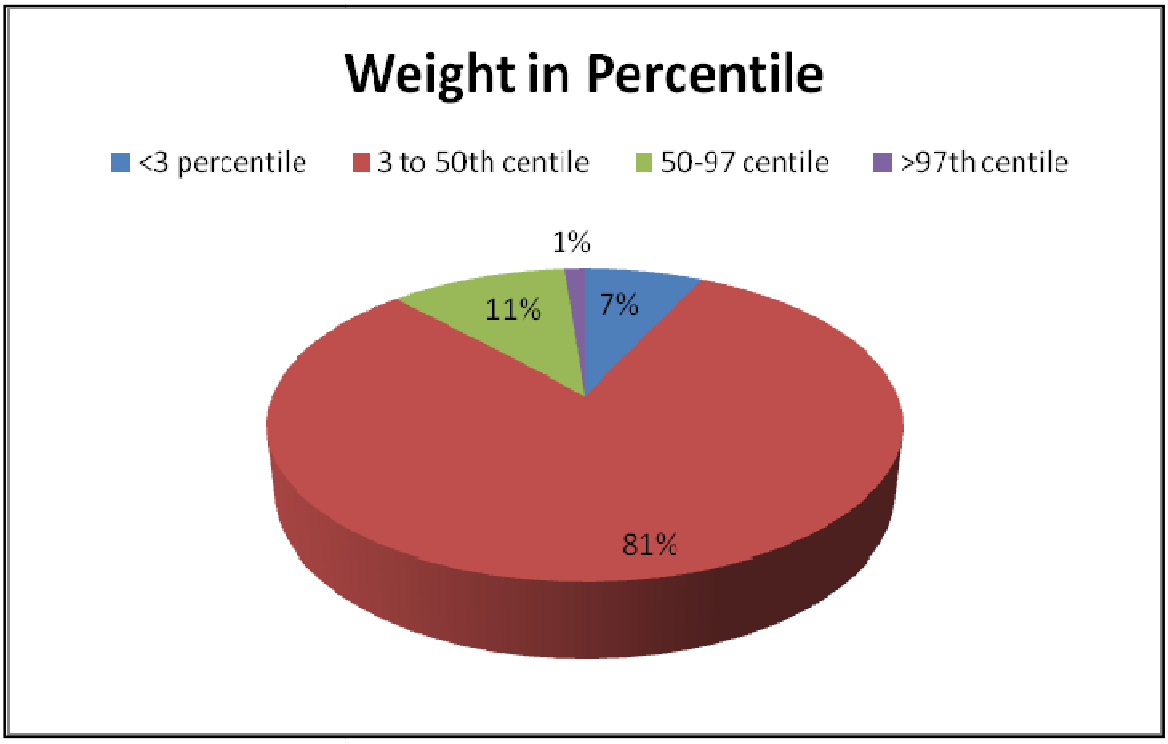


WEIGHT IN PERCENTILE

Weight in percentile	No	Percentage
<3rd percentile	6	7%
3 to 50th percentile	67	81%
>50-97 percentile	9	11%
>97th percentile	1	1%
Total	**83**	**100% of N=83**

Weight in percentile	No	Percentage	E	95% CI in %
<5th percentile	6	7%	0.061606	3-16
3 to 50th centile	67	81%	0.174248	62-97
50-97 centile	9	11%	0.061606	4-16
>97th centile	1	1%	0.021514	0-2

Out of 100 Late Preterms 83 were followed up at 6 months.Weight of 83 babies were recorded and plotted in WHO growth chart.Of which 7% of babies were weighing <3rd percentile,81% were weighing between 3 to 50 th percentile,11% 50-97 percentile and 1% >97 percentile.



Neuro Developemental Outcome

Neuro developmental outcome	No	Percentage
Normal	64	77%
Abnormal	4	5%
Questionable	15	18%
Total	**83**	**100% of N = 83**

Variables	No	Error	95% CI in %
Abnormal Neurodevelopmental outcome	4	0.038408	0-7
Questionable outcome	15	0.069986	8-22
Normal	64	0.09408	55-73

83 babies were followed up at 6 months to assess the neurodevelopmental outcome using Denver development screening test(DDST). The assessment in 4 babies (5%) were reported to be abnormal, 15 babies (18%) were reported as questionable.The assessment in remaining 64 babies(77%) were normal.

Statistical Analysis

Variables	No	Proportion	E	95% CI	Range of 95% confidence interval (in %)
Need for resuscitation	16	0.16	0.071855	0.16-0.071<p<0.16+0.071	9-23
Respiratory morbidities	33	0.33	0.092162	0.33-0.0921<p<0.33+0.0921	23-42
Hypoglycemia	13	0.13	0.065915	0.13-0.0659<p<0.13+0.0659	6-19
Jaundice	50	0.5	0.098	0.5-0.098<p<0.5+0.098	40-59
Sepsis	33	0.33	0.092162	0.33-0.0921<p<0.33+0.0921	23-42
IV fluids	29	0.29	0.088937	0.29-0.0889<p<0.29+0.0889	20-38
Mortality	2	0.02	0.277047	0.02-0.2770<p<0.02+0.2770	Not significant

DISCUSSION

DISCUSSION

This study assessed the short term morbidities, Mortality and long term outcome of late Preterm(N=100).This study is a descriptive study on propective Basis,In the study period 100 late preterm were taken up for the study.

Results:

The analysis of our study is as follows

- ✓ 23% of babies were delivered at 34-346/7 weeks of gestation,32 % at 35-356/7 weeks of gestation,45% at 36-36 6/7 weeks of gestation.
- ✓ Boys in the study group were 56% and girls in the group were 44%.
- ✓ Mothers of 30 babies received complete course of steroids,mothers of 40 babies received incomplete course, ansd mothers of 30 babies received no steroids.
- ✓ 46% of mothers nad labour pain and 54% experienced no pain.
- ✓ Preterm labour was the most common cause of Late preterm births comprising of about 41% followed by Twin

- ✓ gestation-11%, PIH-11%, Previous LSCS-10 %, PROM-8%, Fetal distress-5%, Oligohydraminos-4%,GDM-3% , MSAF-3%,Failed induction-2 %, IUGR-1% and APH-1%.
- ✓ Out of 100 Late Preterms delivered,43% were delivered by Labour natural, 55% by LSCS and about 2% by Assisted delivery.
- ✓ Gestational age assesment in 42 % were done by means of 1st Trimester Ultrasonogram.for 37% assesment was done based on LMP and in 21% by New Ballard scoring.
- ✓ 17% were SGA, 3% were LGA and 80 % were AGA.
- ✓ 16% of babies required resuscitation at birth, 5 babies requires initial steps of resuscitation,9 babies required Positive Pressure Ventilation and 2 babies required Intubation.
- ✓ 33% suffered from Respiratory distress,of which 21 babies required O2,6 babies required surfactant and 6 babies required ventilatory support.
- ✓ 50% had Neonatal jaundice.Of 50 babies,7 required No Treatment, 38 babies required Phototherapy and 4 babies required Exchange Transfusion.

- ✓ 13% of babies experience hypoglycemia.
- ✓ 33% of babies had Sepsis, of that 17 babies had Suspected Sepsis,11 babies had Probable Sepsis, and 5% had culture positive Sepsis.
- ✓ 9% of babies required Intravenous Fluids.
- ✓ Mortality of Late Preterms were about 2 %.

Results on Follow up:

At 6 months of follow up, 83 babies were followed up.

Weight in Percentile at 6 months:

- ✓ 7% of babies were < 3rdpercentile.
- ✓ 81% of babies were between 3-50 th percentile.
- ✓ 9% of babies were between 50-97 percentile.
- ✓ 1% of babies were >97 Percentile.

Neurodevelopmental outcome:

- ✓ It was assessed based on Denver Development Screening Test.
- ✓ The assesment in 5% were Abnormal,18% were Questionable, and Normal in 77% of babies.

Comparison with other studies

Causes of Late Preterm:

In a study done at KIMS, by Amarjeet S Wagh and Naveen Jain, Preterm labour and PROM remained as the cause for 53(46.9%) Late Preterm deliveries followed by PIH,GDM,APH,Multiple gestation,Fetal distress,MSAF which accounted for about 53.5%

Where as, in our study,Preterm labour was the most common cause comprising of about 41% followed by other causes.

Need for Resuscitation at Birth:

In a study done at KIMS,14% of Late Preterm required resuscitation.

In our study 16% of Late Preterms, required resuscitation.

Respiratory distress:

Study done at KIMS, reported 9.8% of Late Preterm with Respiratory distress.

Study done at Fernandez hospital,Hyderabad; Respiratory morbidity accounted for 10 .5% of Late Preterms of which, 3% required any mode of ventilation,2 .5% required CPAP, 0.5% required IPPV.

12.4% of babies had respiratory distress, in a study done FemithaP,Bhat BV. Of these babies, 17.3% required Non-invasive ventilation whereas14.6% required Invasive ventilation.

Our study reported 33% of babies with Respiratory distress.

Neonatal Jaundice:

KIMS study reported 50 % of cases with Neonatal Jaundice.

Fernandez hospital Hyderabad reported 55.1% of babies with Hyperbilirubinemia.

Study done by Femitha P,Bhat BV reported 26% of Late Preterm babies with Jaundice.

In our study,Jaundice accounted for 5 % of babies.

Hypoglycemia:

KIMS study reported 3% of babies with Hypoglycemia.

Fernandez hospital reported 8.8% of babies with Hypoglycemia.

In our study the incidence was 13%.

Requirement of Intravenous Fluids:

KIMS study reported that 58% of babies required Intravenous Fluids.

Our study reported the requirement as 9%.

Sepsis:

KIMS study reported incidence of sepsis to be 9.6%.

Study at Fernandez hospital,Hyderebad,incidence of Probable sepsis was 4.1%, and 1.1% of Confirmatory Sepsis.

Femitha P,Bhat BV study reported 20.8% as incidence of Sepsis.

Our study reported to be 33%, of which 17 babies had suspected sepsis, 11 babies had Probable Sepsis, and 5% had culture positive sepsis.

Birth weight:

KIMS study showed that the percentage of AGA was 80.7%,SGA to be 11.4% and LGA as 7.8%.

In a study by Prabhakar Kore Hospital,Belgaum, most of the babies that is 41% had Birth weight between 1.51 kg to 2.0 kg.

In our study the incidence of AGA was 80 %, SGA was 17% and and AGA was 3%.

Mortality:

Prabhakar core hospital reported incidence of mortality as 5.95%.

In our study the mortality was 2%.

Weight in percentile on Follow-up:

In a study at KIMS,at 3 months of follow up, 13.2% of babies weighed > 5 percentile,83.1% between 5 to 5 th percentile. 3.6% weighed <5 percentile.

In our study 7% of babies were weighing <3rd percentile,81% were weighing between 3 to 5 th percentile,11% >5 th percentile and 1% >97 percentile.

Neurodevelopment outcome:

Neurodevelopment outcome was assesed using Denver Development screening Test. In 73% it was normal, abnormal in 4.8%, in 20.4% of babies it was questionable.In 1.2 % it was more than 1 abnormal,In 3.6% it was more than 1 questionable.

In our study,The assessment in 4 babies (5%) were reported to be abnormal, 15 babies (18%) were reported as questionable.The assessment in remaining 64 babies(77%) were normal

Strength of the study

Our study is a prospective observational study with a follow up for 6 months done in a Tertiary care centre with variety of Late preterm problems which were addressed in our study.

A follow up of 6 months was done to assess the Neurodevelopment outcome which will screen the newborns for the neurodevelopment disability reasonably.

There were only very few Studies assessing the morbidy, mortality and long term neurological outcome in Late Preterm population and there was no study conducted in our set up with Late Preterm.

Drawbacks of the study

Study population are taken from Tertiary care hospital where there is a large proportion of mother being referred for antenatal problems.

This study is an exploratory study.No much studies have been done with this population.So sample size was not calculated using the formula to calculate it.

Higher the incidence of LSCS,which may itself predispose the Newborn to Respiratory morbidity like TTN.

This study is a short study with the follow up of Neurodevelopment outcome till 6 months which is inadequate to draw conclusion about the true incidence of Neurodevelopment disability in high risk groups.

CONCLUSION

Conclusion

Our study gives a clear idea about the morbidity,mortality and Neurodevelopment disability in Late Preterm chiold.

It has also shown that continuous monitoring is necessary in Late Preterms so as to reduce the morbidities like Respiratory distress, Sepsis, Jaundice,Hypoglycemia,requirement of Intravenous fluids,Requirement of resuscitation.

Also screening of Late preterms for Neurodevelopment disability is essential to prevent sequelae of Neurodevelopment disability.

Late Preterms should be given as equal importance as Term in Monitoring for morbidity and also sholuld be followed up for Neurological outcome.This will help in improving Newborn care and will improve human health status.

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ABBREVIATIONS

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- AGA Appropriate for Gestational Age.
- APH AntePartum Hemorrhage.
- CPAP Continuous Positive Airway Pressure.
- CRPC Reactive Protein.
- CI Confidence Interval.
- DDST Denver Development Screening Tool.
- EBM Expressed Breast Milk.
- GDM Gestational Diabetes Mellitus.
- IL-6 InterLeukin-6.
- IVF Intravenous Fluid.
- IUGR Intra Uterine Growth Restriction.
- LMP Last Menstrual Period.
- LGA Large for Gestation Age.
- LSCS Lower Segment Caesarean Section.
- MSAF Meconium Stained Amniotic Fluid.
- NBS New Ballard Scoring.
- NICU Neonatal Intensive Care Unit.
- NRP Neonatal Resuscitation Protocol.
- PROM Premature Rupture Of Membrane.

- PPV Positive Pressure Ventilation.
- PIH Pregnancy Induced Hypertension.
- RTA Renal Tubular Acidosis
- RSV Respiratory Synctitial virus
- SGA Small for Gestation Age
- VLBW Very Low Birth Weight
- WHO World Health Organisation.

ANNEXURE

INFORMATION SHEET

Place of study: INSTITUTE OF OBSTETRICS AND GYNECOLOGY

Name of Investigator : B.ABINAYALAKSHMI

Name of Participant age: sex:

Hospital No:

Study title : **A PROFILE OF MORBIDITY, MORTALITY AND LONG-TERM OUTCOME OF LATE-PRETERM BIRTHS**

• We are conducting a **study of assessing** **MORBIDITY, MORTALITY AND LONG-TERM OUTCOME OF LATE-PRETERM BIRTHS**

We request you to participate in the study

• The purpose of this study is to assess the Morbidity, Mortality and long-term outcome of late-preterm births. And to show that incidence of Mortality and morbidity is higher in late preterm compared to term babies.

• The privacy of the patients in the research will be maintained throughout the study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.

• Taking part in this study is voluntary. You are free to decide whether to participate in this study or to withdraw at any time; your decision will not result in any loss of benefits to which you are otherwise entitled.

• The results of the special study may be intimated to you at the end of the study period or during the study if anything is found abnormal which may aid in the management or treatment.

Signature of investigator

Signature of participant/parent/guardian

Date:

INFORMED CONSENT FORM

Study place: INSTITUTE OF OBSTETRICS AND GYNECOLOGY

Title of the study : **A PROFILE OF MORBIDITY, MORTALITY AND LONG-TERM OUTCOME OF LATE-PRETERM BIRTHS**

Name of the investigator : B.ABINAYALAKSHMI

Name of the Participant: Age: Sex:

Hospital number:

1. I have read and understood this consent form and the information provided to me regarding the participation in the study.

2. I have had the consent document explained to me.

3. I have been explained about the nature of the study.

4. I have been explained about my rights and responsibilities by the investigator.

5. I have informed the investigator of all the treatments I am taking or have taken in the past including any native (alternative) treatment.

6. I have been advised about the risks associated with my participation in this study.*

7. I agree to cooperate with the investigator and I will inform him/her immediately if I suffer unusual symptoms.

8. I have not participated in any research study in the past.

10. I am aware of the fact that I can opt out of the study at any time without having to give any reason and this will not affect my future treatment in this hospital. *

11. I am also aware that the investigator may terminate my participation in the study at any time, for any reason, without my consent. *

12. I hereby give permission to the investigators to release the information obtained from me as resu of participation in this study to the sponsors, regulatory authorities, Govt. agencies, and IEC. I

understand that they are publicly presented.

13. I have understand that my identity will be kept confidential if my data are publicly presented

14. I have had my questions answered to my satisfaction.

15. I have decided to be in the research study.

I am aware that if I have any question during this study, I should contact the investigator. By signing this consent form I attest that the information given in this document has been clearly explained to me and understood by me, I will be given a copy of this consent document. For adult participants:

Name and signature / thumb impression of the participant /parents/guardian

Name _____ Signature_____ Date_____

Name and Signature of impartial witness:

Name _____ Signature_____ Date_____

Name and Signature of the investigator or his representative obtaining consent:

Name _____ Signature_____ Date_____

தகவல் படிவம்

ஆய்வு தலைப்பு : குறைமாதத்தில் பிறக்கும் பச்சிளங்குழந்தைகளுக்கு ஏற்படும் (34 – 36 6/7) நோயின் தன்மை இறப்பு விகிதம் மற்றும் அக்குழந்தைகளின் வளர்ச்சியை 6 மாதம் வரை கண்காணிக்கும் ஆய்வு.

இடம் : அரசு தாய் சேய் நல மருத்துவமனை, எழும்பூர், சென்னை-8.

குழந்தையின் பெயர் : தேதி :

த/பெயர் : உள்/வெளி நோயாளி எண் :

வயது : ஆராய்ச்சி சேர்க்கை எண் :

பாலினம் :

தங்கள் குழந்தையும் இந்த ஆய்வில் பங்கு பெற கேட்டுக் கொள்கிறோம்.

1. குறைமாதத்தில் பிறக்கும் பச்சிளங்குழந்தைகளுக்கு ஏற்படும் (34 – 36 6/7) நோயின் தன்மை இறப்பு விகிதம் மற்றும் அக்குழந்தைகளின் வளர்ச்சியை 6 மாதம் வரை கண்காணிக்கும் ஆய்வு.
2. இது போன்ற ஆய்வு தென் இந்தியக் குழந்தைகளை வைத்து மிக குறைவான ஆய்வுகளே நடந்துள்ளன.
3. இதனால் குழந்தையின் நோய்வளர்ச்சி மற்றும் சிகிச்சைப் பலன்கள் பற்றி அறிந்து கொள்ள முடியும்.
4. இந்த ஆய்வில் கலந்து கொள்வதன் மூலம் என் குழந்தையிடம் பெறப்படும் தகவலை ஆய்வாளர் இன்ஸடிட்யூசனல் எத்திக்ஸ் கமிட்டினரிடமோ, அரசு நிறுவனத்திடமோ தேவைப்பட்டால் பகிர்ந்து கொள்ளலாம் என சம்மதிக்கிறேன்.
5. உங்கள் குழந்தையை பற்றிய விபரங்கள் யாருக்கும் தெரிவிக்காமல் பாதுகாக்கப்படும்.
6. இந்த ஆய்வில் பங்கு பெறுவது உங்கள் தனிப்பட்ட விருப்பம் ஆகும். நீங்கள் இந்த ஆய்விலிருந்து எப்பொழுது வேண்டுமானாலும் விலகிக் கொள்ளலாம். அவ்வாறு விலகுவதால் குழந்தையின் சிகிச்சையில் எவ்வித பாதிப்பும் ஏற்படாது.
7. ஆய்வாளர் இந்த ஆய்வில் என் குழந்தையின் பங்களிப்பை எந்த நேரத்திலும் எந்த காரணத்திற்காகவும், எவ்வித ஒப்புதல் இல்லாமலும் நிறுத்திக் கொள்ளலாம் எனவும் தெரிந்து கொண்டேன்.

8. ஆய்வில் பங்குகொள்ளும்போது ஏதேனும் சந்தேகம் ஏற்பட்டால் ஆய்வாளரை தொடர்பு கொள்ளலாம்.

இச்சுய தகவல் படிவத்தில் கையெழுத்திடுவதன் மூலம் இதிலுள்ள அனைத்து விஷயங்களும் எனக்கு தெளிவாக விளக்கப்பட்டது என்று தெரிவிக்கிறேன். இச்சுய படிவத்தின் ஒரு நகல் எனக்கு கொடுக்கப்படும் என்று தெரிந்து கொண்டேன்.

பங்கேற்பாளர்

பங்கேற்பாளருடைய பெயர் மற்றும் கையொப்பம்/கைரேகை (அல்லது சட்ட ரீதியான பிரதிநிதி - பங்கேற்பாளர் செயல்திறமையற்றவராக இருந்தால் / 17 வயதிற்கு கீழ் உள்ளவர்களுக்கு - பெற்றோர் / பாதுகாவலர்)

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பெயர் கையொப்பம்/கைரேகை தேதி

நடுநிலைமையிலுள்ள சாட்சியாளரின் முகவரி மற்றும் கையொப்பம் (படிப்பறிவு இல்லாத மக்களுக்கு)

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பெயர் கையொப்பம்/கைரேகை தேதி

நடுநிலைமையிலுள்ள சாட்சியாளரின் முகவரி மற்றும் தொலைபேசி எண்

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ஆராய்ச்சியாளரின் பெயர் கையொப்பம் தேதி

சுய ஒப்புதல் படிவம்

ஆய்வு தலைப்பு : குறைமாதத்தில் பிறக்கும் பச்சிளங்குழந்தைகளுக்கு ஏற்படும் (34 – 36 6/7) நோயின் தன்மை இறப்பு விகிதம் மற்றும் அக்குழந்தைகளின் வளர்ச்சியை 6 மாதம் வரை கண்காணிக்கும் ஆய்வு.

இடம் : அரசு தாய்சேய் நல மருத்துவமனை, எழும்பூர், சென்னை-8.

குழந்தையின் பெயர் : தேதி :

த/பெயர் : உள்/வெளி நோயாளி எண் :

வயது : ஆராய்ச்சி சேர்க்கை எண் :

..... என்பவராகிய நான் இந்த ஆய்வின் விவரங்களை படித்து தெரிந்து கொண்டேன் (அல்லது) எனக்கு படித்து காண்பிக்கப்பட்டது. அதன் நோக்கங்களும் முறையாக அறிந்து கொண்டேன். எனது சந்தேகங்கள் அனைத்திற்கும் தகுந்த விளக்கம் அளிக்கப்பட்டது. இந்த ஆய்வில் முழு சுதந்திரத்துடன் மற்றும் சுயநினைவுடன் பங்குகொள்ள சம்மதிக்கிறேன்.

1. இந்த ஒப்புதல் படிவத்தை நான் படித்து புரிந்து கொண்டேன்.
2. இச் சுய ஒப்புதல் படிவத்தை பற்றி எனக்கு விளக்கப்பட்டது.
3. இந்த ஆய்வினை பற்றிய அனைத்து தகவல்களும் எனக்கு தெரிவிக்கப்பட்டது.
4. இந்த ஆய்வில் எனது உரிமை மற்றும் பங்கினை பற்றி அறிந்து கொண்டேன்.
5. இந்த ஆய்வில் என் குழந்தைக்கு ஏற்படும் நோயின் தன்மையும் மற்றும் வளர்ச்சியை ஆறு மாதம் வரை கண்காணிப்பதின் முக்கியத்துவம் எனக்கு விளக்கப்பட்டது.
6. இந்த ஆராய்ச்சியில் இருந்து நான் எந்நேரமும் பின் வாங்கலாம் என்பதையும் அதனால் எந்த பாதிப்பும் ஏற்படாது என்பதையும் நான் புரிந்து கொண்டேன்.
7. ஆய்வாளர் இந்த ஆய்வில் என் குழந்தையின் பங்களிப்பை எந்த நேரத்திலும் எந்த காரணத்திற்காகவும், எவ்வித ஒப்புதல் இல்லாமலும் நிறுத்திக் கொள்ளலாம் எனவும் தெரிந்து கொண்டேன்.
8. இந்த ஆய்வில் கலந்து கொள்வதன் மூலம் என் குழந்தையிடம் பெறப்படும் தகவலை ஆய்வாளர் இன்ஸடிட்யூசனல் எத்திக்ஸ் கமிட்டியினரிடமோ, அரசு நிறுவனத்திடமோ தேவைப்பட்டால் பகிர்ந்து கொள்ளலாம் என சம்மதிக்கிறேன்.
9. இந்த ஆய்வின் முடிவுகளை வெளியிடும்போது என் குழந்தையின் பெயரோ, அடையாளமோ வெளியிடப்படாது என அறிந்து கொண்டேன். இந்த ஆய்வின் விவரங்களைக் கொண்ட தகவல் தாளைப் பெற்றுக் கொண்டேன்.
10. எனது எல்லா கேள்விகளுக்கும் திருப்திகராமாக பதிலளிக்கப்பட்டது.
11. இந்த ஆராய்ச்சியில் பங்களிக்க வேண்டுமென முடிவு செய்துள்ளேன்.

8. ஆய்வில் பங்குகொள்ளும்போது ஏதேனும் சந்தேகம் ஏற்பட்டால் ஆய்வாளரை தொடர்பு கொள்ளலாம்.

இச்சுய தகவல் படிவத்தில் கையெழுத்திடுவதன் மூலம் இதிலுள்ள அனைத்து விஷயங்களும் எனக்கு தெளிவாக விளக்கப்பட்டது என்று தெரிவிக்கிறேன். இச்சுய படிவத்தின் ஒரு நகல் எனக்கு கொடுக்கப்படும் என்று தெரிந்து கொண்டேன்.

பங்கேற்பாளர்

பங்கேற்பாளருடைய பெயர் மற்றும் கையொப்பம்/கைரேகை (அல்லது சட்ட ரீதியான பிரதிநிதி - பங்கேற்பாளர் செயல்திறமையற்றவராக இருந்தால் / 17 வயதிற்கு கீழ் உள்ளவர்களுக்கு - பெற்றோர் / பாதுகாவலர்)

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பெயர் கையொப்பம்/கைரேகை தேதி

நடுநிலைமையிலுள்ள சாட்சியாளரின் முகவரி மற்றும் கையொப்பம் (படிப்பறிவு இல்லாத மக்களுக்கு)

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பெயர் கையொப்பம்/கைரேகை தேதி

நடுநிலைமையிலுள்ள சாட்சியாளரின் முகவரி மற்றும் தொலைபேசி எண்

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ஆராய்ச்சியாளரின் பெயர் கையொப்பம் தேதி

DATA COLLECTION FORM

1. Name:
2. Age:NB(34-36 6/7)
3. Gender:
4. Disc no:
5. Parent's name:
6. Address:
7. Phone number:
8. History :

   Maternal data:

   Antenatal steroids-Y/N

   Presence of and duration of labour pain- hrs

   Indication for Late preterm-

   Trial of induction-Y/N

9. Birth history:

   Mode of delivery-normal/assisted/LSCS

   Gestation age(34-36 6/7) acc to 1st trimester USG/LMP/NBS

Birth weight

10.Need for resuscitation at birth:

Initial steps/Need for O2/PPV/Chest compressions

11.Respiratory morbidities:

Need for o2-Y/N

Need for surfactant-Y/N

Need for venbtilator-Y/N

12.Hypoglycemia-Y/N

13.Neonatal jaundice-No treatment/phototherapy/Exchange transfusion

14.Sepsis-suspected/probable/culture positive sepsis

15.Intravenous fluid-Y/N

At Discharge: WT,Length,HC

Follow up outcomes:

Exclusive breast feeds till 6 months-

Wt, Length,HC

Neurodevelopmental outcome (DDST)

N/abn/Questionable/more than 1 abn/more than 1 questionable

S.no	Name	Age of newborn	Gender	Disc no	Parent's name	History-maternal Data		
		34-36wks 6/7				Antenatal ster	Durn of lal	Indication for late term
1	B/o saranya	35 1/7	Girl	109(p)	saranya, ravi	incomplete	1.3	Preterm labour
2	B/o dilliirani	35	Girl	13(p)	Dilliirani,santhosh	Complete	no	PIH
3	B/o Nivedha	36	Girl	144-p	Nivetha,sakthivel	Incomplete	no	IUGR
4	B/o Sudha	34 3/7	Girl	919 p	Sudha,sekar	Complete	no	Failed Induction
5	B/o kanniyammal	35 5/7	Boy	516-b	kanniyammal,sekar	Complete	no	Failed Induction
6	B/o Monika	36 4/7	Girl	768-p	Monika,madhiselvan	Incomplete	2	Preterm labour
7	B/o selvi twin1	36 3/7	Boy	19-r 1	selvi,Ganesan	Complete	no	Twin,Fetal discordancy
8	B/o selvi twin 2	36 3/7	Boy	19-r 1	selvi,Ganesan	Complete	no	Twin,Fetal discordancy
9	B/o Devi twin1	34 4/7	Boy	41-r 1	Devi,Shanmugam	No	no	Prev LSCS, Scar dehisence
10	B/o Devi twin 2	34 4/7	Boy	41-r 1	Devi,Shanmugam	No	no	Prev LSCS, Scar dehisence
11	B/o Devi	34 3/7	Boy	96-b	Devi,vishnu	Incomplete	1 hr 45 min	Preterm labour
12	B/o Shanthi twin 1	36 6/7	Girl	11 r	Shanthi, sankar	Incomplete	No	Twin,Fetal distress
13	B/o Shanthi twin 2	36 6/7	Girl	11-r	Shanthi, sankar	Incomplete	No	Twin,Fetal distress
14	B/o Chithra	36 6/7	Girl	76-p	Chithra,Ragu	Incomplete	3 hrs	Preterm labour
15	B/o senthamil selvi	35 2/7	Boy	459-b	senthamilsevi. rasaiyan	No	no	PPROM
16	B/o Monika	36 4/7	Girl	768-p	Monika,Selvam	Incomplete	3 hrs	APH
17	B/o Monika twin 1	34 4/7	Boy	21-r 1	Monika,baskar	Complete	no	Twin,prev LSCS,Scar dehiscence
18	B/o Monika twin 2	34 4/7	Boy	21-r 2	Monika,baskar	Complete	no	Prev LSCS, Scar dehisence
19	B/o Revathy	36 4/7	Girl	109-p	Revathy,Balaji	Complete	no	severe oligohydraminos
20	B/o Lalitha	36 1/7	Girl	84 p	Lalitha,Anbu	incomplete	no	GDM on insulin
21	B/o Kalaiselvi	34 4/7	Girl	858-p	Kalaiselvi,Ganesh	incomplete	no	PIH
22	B/o Radha	36 2/7	Boy	189-b	Radha,Rajesh	incomplete	no	PIH
23	B/o Monika	36	Girl	85-p	Monika,Sriram	No	1 hr 35 min	Preterm labour
24	B/o Shenbagavalli	34 5/7	Girl	95-p	Shenbagavalli, Nataraj	No	3 hrs	Preterm labour
25	B/o dharani	35 3/7	Girl	294-p	Dharani,Santhosh	Incomplete	no	severe oligohydraminos
26	B/o Priyanka	36 6/7	Boy	69-b	Priyanka,Subramanian	No	1 hr	Preterm labour
27	B/o Anbuselvi	35 5/7	Boy	959-b	Anbuselvi,Damodaran	incomplete	no	Prev LSCS, Scar dehisence
28	B/o Vidhya	35 3/7	Boy	71 b	Vidhya,Murugan	Complete	no	PIH
29	B/o Anitha	36 5/7	Girl	914-p	Anitha,Balamurugan	No	3 hrs	PROM
30	B/o Sujitha	34 3/7	Girl	677-p	Sujitha,Shanmugam	Complete	no	severe oligohydraminos
31	B/o Nandhini	36 4/7	Boy	33-b	Nandhini,sekar	Incomplete	no	PIH
32	B/o Priya	34 5/7	Boy	741-b	Priya,Selvam	incomplete	3 hrs	Preterm labour

33	B/o Arockiamary	36 5/7	Boy	35-r	Arockiamary,Thomas	No	1 hr	Preterm labour
34	B/o Bhuvaneshwari	35 4/7	Boy	111-b		incomplete	1.5 hrs	Preterm labour
35	B/o Soundarya	35	Boy	936-b	Soundarya,Ram	Complete	3 hrs	Preterm labour
36	B/o Veeravanitha	34 1/7	Boy	337-b	Veeravanitha,Ayyanar	Complete	1 hr 45 min	Preterm labour
37	B/o Jothi	34	Boy	566-b	Jothi,Amarnath	Complete	1 hr	PIH
38	B/o Saranya twin 1	35	Girl	44-r 1	Saranya,Karthick	No	4 hrs	Preterm labour
39	B/o Saranya twin 2	35	Girl	44-r	Saranya,Karthick	No	4 hrs	Preterm labour
40	B/o Roopa	35 1/7	Boy	78-b	Roopa,Ravi	incomplete	1 hr	Preterm labour
41	B/o Poonkodi	36 5/7	Boy	118-b	Poonkodi,Vellasamy	No	no	Prev LSCS, Scar dehisence
42	B/o Anushaya	36 3/7	Boy	69-b	Anushaya, Rahul	incomplete	1 hr	Preterm labour
43	B/o Suguna	35 4/7	Boy	383-b	Suguna,Suresh	Complete	no	PIH
44	B/o Amudha	34 1/7	Girl	41-p	Amudha, Ilamaran	Complete	No	GDM on insulin,fetal distress
45	B/o Shabeena	36 5/7	Girl	681-p	Shabeena, Md Rafiq	no	3 hrs	Preterm labour
46	B/o Priya	34 4/7	Girl	691-p	Priya,Alex	Complete	no	PIH
47	B/o Abirami twin 1	36 6/7	Boy	11-r 1	Abirami,Siva	Complete	no	Twin,Fetal distress
48	B/o Abirami twin 2	36 6/7	Boy	11-r	Abirami,Siva	Complete	no	Twin,Fetal distress
49	B/o Lakshmi	36 6/7	Boy	896-b	Lakshmi,Manohar	incomplete	3 hrs	Preterm labour
50	B/o Ruthra twin 1	35 3/7	Girl	55-r 1	Ruthra, Ramesh	Complete	no	Twin,Fetal distress
51	B/o Ruthra twin 2	35 3/7	Girl	55-r	Ruthra,Ramesh	Complete	no	Twin,Fetal distress
52	B/o Vijayalakshmi	36 3/7	Boy	815-b	Vijayalakshmi,Suresh	No	1.5 hrs	Preterm labour
53	B/o Manjula	35 1/7	Boy	55-b	Manjula,Rajesh	No	3 hrs	Preterm labour
54	B/o Kokila devi	36 3/7	Girl	675-p	Kokila devi,Ganesan	incomplete	no	Fetal distress
55	B/o Sathya priya	34 3/7	Boy	593-b	Sathya priya, Saravanan	No	1 hr	Preterm labour
56	B/o Vani	36 1/7	Boy	711-b	Vani,Sugumar	Incomplete	3 hrs	Preterm labour
57	B/o Seby	35 1/7	Boy	117-b	Seby,shahul hameed	No	1 hr	Preterm labour
58	B/o Priya twin 1	35 3/7	Boy	51-r 1	Priya,Jagadeesh	Complete	no	Twin,fetal distress
59	B/o Priya twin 2	35 3/7	Boy	51-r	Priya,Jagadeesh	Complete	No	Twin,Fetal distress
60	B/o Poonkodi	34 3/7	Boy	875-b	Poonkodi,Marudhu	Incomplete	3 hrs	Preterm labour
61	B/o Rakshana	36	Girl	378-p	Rakshana,Yasar	Incomplete	No	GDM on insulin
62	B/o Thirumalaiselvi	36 3/7	Boy	113-b	Thirumalaiselvi,Babu	incomplete	No	Fetal distress
63	B/o Rohini	36 3/7	Boy	415-b	Rohini,Raja	Incomplete	No	severe oligohydraminos,fetal distress
64	B/o Manjula	34 5/7	Boy	76-b	Manjula,Saravanan	No	4 hrs	Preterm labour
65	B/o Queenee	36 4/7	Girl	451-p	Queenee, Stalin	Incomplete	no	PIH
66	B/o Chandrakala	36 5/7	Boy	51-b	Chandrakala,Siva	No	No	Fetal distress
67	B/o Roselin	36 3/7	Girl	37-p	Roselin,Peter	No	No	Prev LSCS, Scar dehisence

68	B/o Vanitha	35 6/7	Boy	394-b	Vanitha,Vijay	Incomplete	No	Prev LSCS, Scar dehisence
69	B/o Gayathri	34 4/7	Boy	981-b	Gayathri, Karthick	Incomplete	3 hrs	Preterm labour
70	B/o Meenakumari	35 3/7	Boy	851-b	Meenakumari,Kumaresan	No	4 hrs	Preterm labour
71	B/o Vijaya	36 3/7	Girl	388-p	Vijaya,Karthikeyan	incomplete	1 hr	Preterm labour
72	B/o Maheswari	35 6/7	Girl	318-p	Maheswari,Velmurugan	No	3 hrs	Preterm labour
73	B/o Saraswathy	36 6/7	Girl	49-p	Saraswathy,Sivaguru	No	1.5 hrs	Preterm labour
74	B/o Bhavani	35 3/7	Boy	731-b	Bhavani,Suresh	Incomplete	3 hrs	Preterm labour
75	B/o Gowri Manohari	35	Girl	867-p	Gowrimanohari,Shankar	No	1 hr	Preterm labour
76	B/o Ramya	36 3/7	Girl	991-p	Ramya,Mukesh	incomplete	No	MSAF,Fetal distress
77	B/o Geetha	34 5/7	Girl	946-p	Geetha,Kumar	incomplete	3 hrs	Preterm labour
78	B/o Shalini	35 4/7	Boy	691-b	Shalini,sankar	Complete	No	PROM,Severe oligohydraminos
79	B/o Sumithra	35 5/7	Boy	151-b	Sumithra, Venkatesh	Incomplete	3 hrs	Preterm labour
80	B/o Anitha	36 1/7	Boy	814-b	Anitha,Balamurugan	No	1 hr	Preterm labour
81	B/o Shanmugapriya	35 5/7	Girl	149-p	Shanmugapriya,Santhosh	Incomplete	No	PROM,Severe oligohydraminos
82	B/o Priya	35 3/7	Boy	377-b	Priya,Ragunathan	No	3 hrs	Preterm labour
83	B/o Suguna	36 5/7	Boy	517-b	Suguna,Praveen	Complete	No	PPROM, failed induction
84	B/o Kala	34 1/7	Girl	594-p	Kala, palanivel	Complete	No	PIH
85	B/o Keerthana	36 1/7	Girl	469-p	Keerthana, kadhirvel	No	No	Fetal distress
86	B/o Agalya	36	Boy	93-b	Agalya,Rengarajan	Complete	3 hrs	Prev LSCS,scar dehiscense
87	B/o Santhoshi	36 6/7	Boy	633-b	Santhoshi,Hariharan	Incomplete	no	Prev LSCS, Fetal distress
88	B/o Anusathya	35 5/7	Boy	69-b	Anusathya,Ragavan	Incomplete	No	MSAF, Fetal distress
89	B/o Nithya	35 6/7	Girl	98-p	Nithya, Manoj	incomplete	no	MSAF, Fetal distress
90	B/o Amaravathy	35 4/7	Girl	74-p	Amaravathy, Prabhu	No	3 hrs	Preterm labour
91	B/o Mageshwari	34 6/7	Girl	795-p	Mageshwari,Raja	Complete	no	PIH
92	B/o Arputham	36	Girl	358-p	Arputham, Stephen	No	4 hrs	PPROM
93	B/o Sowmiya	36 4/7	Girl	86-p	Sowmiya,Suganth	incomplete	no	PROM,Severe oligohydraminos
94	B/o Malathi	35 6/7	Girl	76-p	Malathi, Mahaan	incomplete	1.5 hrs	Preterm labour
95	B/o Dropathi	36 6/7	Boy	59-b	Dropathi,Vivek	No	3 hrs	Preterm labour
96	B/o Naziya hussain	34 6/7	Boy	554-b	Naziya hussain, Hussain	Complete	no	PROM,Severe oligohydraminos
97	B/o Meena	36 3/7	Boy	47-b	Meena,Ganesh	No	3 hrs	Preterm labour
98	B/o Sudha	36 3/7	Girl	333-p	Sudha,sekar	incomplete	no	Fetal distress
99	B/o anu	34 3/7	Boy	116-b	Anu,Kamal	Complete	no	Prev LSCS,scar dehiscense
100	B/o Bharathy	35 1/7	Boy	595-b	Bharathy, Baskar	Complete	3 hrs	Preterm labour

S.no	Name	Age of new	Birth History					Need for Resuciation at birth			RespiratorY morbidities		
		34-36wks	Mode of delivery			Gestnl Age as per 1st trim USG/LMP/NBS	B.wt	Initial steps	PPV	Intubation	Need for O2	Need for surfactant	Need for ventilator
			Norma	Assisted	LSCS	34-36wks 6/7							
1	B/o saranya	35 1/7	Y			1 st trimester USG	1.58		Y			Y	Y
2	B/o dittirani	35			Y	1 st trimester USG	2.29						
3	B/o Nivedha	36			Y	LMP	1.73				Y		Y
4	B/o Sudha	34 3/7			Y	1 st trimester USG	1.865				Y		
5	B/o kanniyammal	35 5/7			Y	LMP	2.96						
6	B/o Monika	36 4/7	Y			1 st trimester USG	2.33		Y				
7	B/o selvi twin1	36 3/7			Y	LMP	2.1						
8	B/o selvi twin 2	36 3/7			Y	LMP	1.71		Y			Y	
9	B/o Devi twin1	34 4/7			Y	1 st trimester USG	1.965	Y			Y		
10	B/o Devi twin 2	34 4/7			Y	1 st trimester USG	1.95	Y			Y		
11	B/o Devi	34 3/7	Y			LMP	2.628	Y					
12	B/o Shanthi twin 1	36 6/7			Y	1 st trimester USG	1.975						
13	B/o Shanthi twin 2	36 6/7			Y	1 st trimester USG	1.545		Y		Y		
14	B/o Chithra	36 6/7	Y			LMP	2.6		Y				
15	B/o senthamil selvi	35 2/7			Y	1 st trimester USG	2.98						
16	B/o Monika	36 4/7	Y			LMP	2.33						
17	B/o Monika twin 1	34 4/7				1 st trimester USG	1.56				Y		
18	B/o Monika twin 2	34 4/7			Y	1 st trimester USG	1.45					Y	Y
19	B/o Revathy	36 4/7			Y	NBS	3.03						
20	B/o Lalitha	36 1/7			Y	LMP	3.585						
21	B/o Kalaiselvi	34 4/7			Y	1 st trimester USG	2.11						
22	B/o Radha	36 2/7			Y	LMP	2.64						
23	B/o Monika	36	Y			LMP	1.83		Y		Y		
24	B/o Shenbagavalli	34 5/7	Y			1 st trimester USG	2.3						
25	B/o dharani	35 3/7			Y	LMP	2.48						
26	B/o Priyanka	36 6/7	Y			LMP	3.25						
27	B/o Anbuselvi	35 5/7			Y	1 st trimester USG	3.6						
28	B/o Vidhya	35 3/7			Y	LMP	1.93				Y		
29	B/o Anitha	36 5/7	Y			NBS	2.64						
30	B/o Sujitha	34 3/7			Y	1 st trimester USG	1.9				Y		
31	B/o Nandhini	36 4/7			Y	LMP	2.03						
32	B/o Priya	34 5/7	Y			NBS	1.959				Y		

33	B/o Arockiamary	36 5/7	Y			1 st trimester USG	2						
34	B/o Bhuvaneshwar	35 4/7		Y		LMP	2.085						
35	B/o Soundarya	35	Y			1 st trimester USG	3						
36	B/o Veeravanitha	34 1/7	Y			1 st trimester USG	1.93				Y		
37	B/o Jothi	34			Y	LMP	1.94				Y		
38	B/o Saranya twin 1	35	Y			NBS	2.04						
39	B/o Saranya twin 2	35	Y			NBS	2.05						
40	B/o Roopa	35 1/7	Y			1 st trimester USG	2.24						
41	B/o Poonkodi	36 5/7			Y	1 st trimester USG	2.58						
42	B/o Anushaya	36 3/7	Y			LMP	2.67						
43	B/o Suguna	35 4/7			Y	1 st trimester USG	2.75						
44	B/o Anudha	34 1/7			Y	1 st trimester USG	1.45			Y		Y	Y
45	B/o Shabeena	36 5/7	Y			LMP	2.85						
46	B/o Priya	34 4/7			Y	1 st trimester USG	1.92				Y		
47	B/o Abirami twin 1	36 6/7			Y	1 st trimester USG	2						
48	B/o Abirami twin 2	36 6/7			Y	1 st trimester USG	1.8	Y			Y		
49	B/o Lakshmi	36 6/7	Y			LMP	2.8						
50	B/o Ruthra twin 1	35 3/7			Y	1 st trimester USG	1.95				Y		
51	B/o Ruthra twin 2	35 3/7			Y	1 st trimester USG	1.69		Y			Y	
52	B/o Vijayalakshmi	36 3/7	Y			NBS	2.2						
53	B/o Manjula	35 1/7	Y			LMP	2						
54	B/o Kokila devi	36 3/7			Y	LMP	2.58						
55	B/o Sathya priya	34 3/7	Y			NBS	2.1						
56	B/o Vani	36 1/7	Y			LMP	2.4						
57	B/o Seby	35 1/7	Y			NBS	1.25			Y			Y
58	B/o Priya twin 1	35 3/7			Y	1 st trimester USG	2.17						
59	B/o Priya twin 2	35 3/7			Y	1 st trimester USG	2.21						
60	B/o Poonkodi	34 3/7	Y			LMP	1.5		Y			Y	Y
61	B/o Rakshana	36			Y	LMP	2.57						
62	B/o Thirumalaiselv	36 3/7			Y	1 st trimester USG	2.46						
63	B/o Rohini	36 3/7			Y	NBS	2.42						
64	B/o Manjula	34 5/7	Y			LMP	2.5						
65	B/o Queenee	36 4/7			Y	NBS	1.735		Y		Y		
66	B/o Chandrakala	36 5/7			Y	1 st trimester USG	2.5						
67	B/o Roselin	36 3/7			Y	LMP	2.34						

68	B/o Vanitha	35 6/7			Y	1 st trimester USG	2.48						
69	B/o Gayathri	34 4/7	Y			LMP	2.4						
70	B/o Meenakumari	35 3/7	Y			NBS	2.2						
71	B/o Vijaya	36 3/7	Y			LMP	3						
72	B/o Maheswari	35 6/7	Y			1 st trimester USG	2.6						
73	B/o Saraswathy	36 6/7	Y			NBS	2.5						
74	B/o Bhavani	35 3/7	Y			LMP	2						
75	B/o Gowri Manoha	35	Y			1 st trimester USG	2.5						
76	B/o Ramya	36 3/7			Y	LMP	2.375						
77	B/o Geetha	34 5/7	Y			NBS	2.5						
78	B/o Shalini	35 4/7			Y	LMP	2				Y		
79	B/o Sumithra	35 5/7	Y			1 st trimester USG	2.5						
80	B/o Anitha	36 1/7	Y			LMP	2.4						
81	B/o Shanmugapriy	35 5/7			Y	1 st trimester USG	2.05				Y		
82	B/o Priya	35 3/7	Y			NBS	2.6						
83	B/o Suguna	36 5/7			Y	LMP	2.5						
84	B/o Kala	34 1/7			Y	NBS	2.94						
85	B/o Keerthana	36 1/7			Y	1 st trimester USG	2.795						
86	B/o Agalya	36			Y	LMP	3						
87	B/o Santhoshi	36 6/7			Y	NBS	3.1						
88	B/o Anusathya	35 5/7			Y	LMP	3.08						
89	B/o Nithya	35 6/7			Y	NBS	2.48						
90	B/o Amaravathy	35 4/7	Y			1 st trimester USG	2.8						
91	B/o Mageshwari	34 6/7			Y	NBS	1.97				Y		
92	B/o Arputham	36		y		LMP	2.5						
93	B/o Sowmiya	36 4/7			Y	1 st trimester USG	2.475						
94	B/o Malathi	35 6/7	Y			1 st trimester USG	2.5						
95	B/o Dropathi	36 6/7	Y			LMP	2.5						
96	B/o Naziya hussain	34 6/7			Y	NBS	2.09				Y		
97	B/o Meena	36 3/7	Y			1 st trimester USG	2.5						
98	B/o Sudha	36 3/7			Y	NBS	2.8						
99	B/o anu	34 3/7			Y	1 st trimester USG	1.9	Y			Y		
100	B/o Bharathy	35 1/7	Y			NBS	2.3						

S.no	Name	Age of ne	Hypoglycemia-Yes/No	Neonatal jaundice-Yes/No	Treatment for neonal jaundice			Sepsis			IV fluids
		34-36wks			No Rx	Phototherapy	Exchange transfusion	Suspected	Probable	Culture positive	Yes / No
1	B/o saranya	35 1/7	Y	Y		Y			Y		Y
2	B/o dillirani	35		Y		Y					
3	B/o Nivedha	36		Y		Y		Y			Y
4	B/o Sudha	34 3/7		Y		Y		Y			Y
5	B/o kanniyammal	35 5/7									
6	B/o Monika	36 4/7		Y	Y						
7	B/o selvi twin1	36 3/7		Y		Y					
8	B/o selvi twin 2	36 3/7	Y	Y		Y			Y		Y
9	B/o Devi twin1	34 4/7		Y		Y		Y			
10	B/o Devi twin 2	34 4/7	Y	Y		Y			Y		Y
11	B/o Devi	34 3/7									
12	B/o Shanthi twin 1	36 6/7		Y		Y		Y			
13	B/o Shanthi twin 2	36 6/7	Y	Y			Y			Y	Y
14	B/o Chithra	36 6/7									
15	B/o senthamil selvi	35 2/7									
16	B/o Monika	36 4/7		Y	Y						
17	B/o Monika twin 1	34 4/7		Y		Y			Y		Y
18	B/o Monika twin 2	34 4/7	Y	Y			Y			Y	Y
19	B/o Revathy	36 4/7									
20	B/o Lalitha	36 1/7	Y								
21	B/o Kalaiselvi	34 4/7		Y		Y		Y			
22	B/o Radha	36 2/7		Y							
23	B/o Monika	36		Y		Y		Y			Y
24	B/o Shenbagavalli	34 5/7		Y		Y					
25	B/o dharani	35 3/7		Y		Y					
26	B/o Priyanka	36 6/7									
27	B/o Anbuselvi	35 5/7	Y								
28	B/o Vidhya	35 3/7		Y	Y				Y		Y
29	B/o Anitha	36 5/7									Y
30	B/o Sujitha	34 3/7		Y		Y		Y			Y
31	B/o Nandhini	36 4/7		Y		Y		Y			
32	B/o Priya	34 5/7		Y		Y			Y		Y

33	B/o Arockiamary	36 5/7		Y		Y		Y			
34	B/o Bhuvaneshwari	35 4/7		Y		Y					
35	B/o Soundarya	35									
36	B/o Veeravanitha	34 1/7		Y		Y		Y			
37	B/o Jothi	34	Y	Y		Y		Y			Y
38	B/o Saranya twin 1	35		Y		Y					Y
39	B/o Saranya twin 2	35		Y		Y					Y
40	B/o Roopa	35 1/7		Y		Y					
41	B/o Poonkodi	36 5/7		Y	Y						
42	B/o Anushaya	36 3/7		Y	Y						
43	B/o Suguna	35 4/7									
44	B/o Anudha	34 1/7	Y	Y			Y			Y	Y
45	B/o Shabeena	36 5/7									
46	B/o Priya	34 4/7		Y		Y					Y
47	B/o Abirami twin 1	36 6/7		Y		Y					
48	B/o Abirami twin 2	36 6/7		Y		Y		Y			Y
49	B/o Lakshmi	36 6/7									
50	B/o Ruthra twin 1	35 3/7		Y		Y		Y			Y
51	B/o Ruthra twin 2	35 3/7	Y	Y		Y			Y		Y
52	B/o Vijayalakshmi	36 3/7									
53	B/o Manjula	35 1/7		Y	Y			Y			
54	B/o Kokila devi	36 3/7									
55	B/o Sathya priya	34 3/7		Y		Y		Y			
56	B/o Vani	36 1/7		Y	Y						
57	B/o Seby	35 1/7	Y	Y			Y			Y	Y
58	B/o Priya twin 1	35 3/7		Y		Y					
59	B/o Priya twin 2	35 3/7						Y			
60	B/o Poonkodi	34 3/7		Y		Y				Y	Y
61	B/o Rakshana	36									
62	B/o Thirumalaiselvi	36 3/7									
63	B/o Rohini	36 3/7									
64	B/o Manjula	34 5/7									
65	B/o Queenee	36 4/7		Y		Y			Y		Y
66	B/o Chandrakala	36 5/7									
67	B/o Roselin	36 3/7		Y		Y					

68	B/o Vanitha	35 6/7									
69	B/o Gayathri	34 4/7									
70	B/o Meenakumari	35 3/7		Y		Y					Y
71	B/o Vijaya	36 3/7									
72	B/o Maheswari	35 6/7									
73	B/o Saraswathy	36 6/7									
74	B/o Bhavani	35 3/7						Y			
75	B/o Gowri Manohari	35									
76	B/o Ramya	36 3/7									
77	B/o Geetha	34 5/7									
78	B/o Shalini	35 4/7		Y		Y			Y		
79	B/o Sumithra	35 5/7									
80	B/o Anitha	36 1/7									
81	B/o Shanmugapriya	35 5/7									Y
82	B/o Priya	35 3/7									
83	B/o Suguna	36 5/7									
84	B/o Kala	34 1/7									
85	B/o Keerthana	36 1/7									
86	B/o Agalya	36									
87	B/o Santhoshi	36 6/7									
88	B/o Anusathya	35 5/7									
89	B/o Nithya	35 6/7									
90	B/o Amaravathy	35 4/7									
91	B/o Mageshwari	34 6/7	Y	Y		Y			Y		Y
92	B/o Arputham	36									
93	B/o Sowmiya	36 4/7									
94	B/o Malathi	35 6/7									
95	B/o Dropathi	36 6/7									
96	B/o Naziya hussain	34 6/7									Y
97	B/o Meena	36 3/7									
98	B/o Sudha	36 3/7									
99	B/o anu	34 3/7	Y	Y		Y			Y		Y
100	B/o Bharathy	35 1/7									